Investigation Report

DRAFT: January 8, 2009

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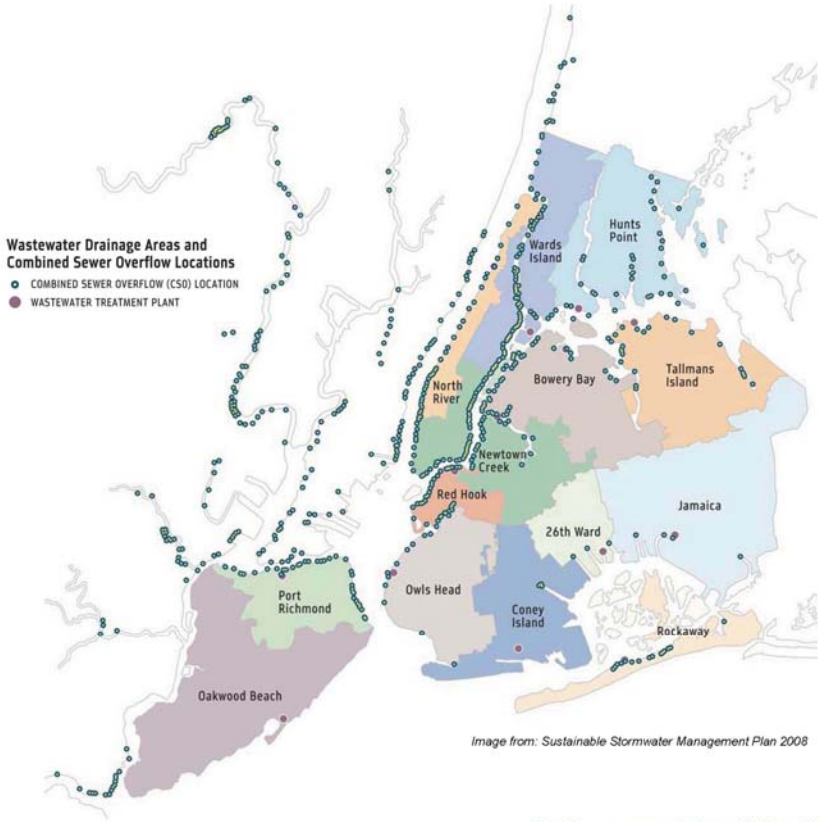
New York City Department of Environmental Protection



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New York City, Department of Environmental Protection
Clean Water Act Investigation Report

EPA Headquarters: U. S. EPA, OECA
Water Enforcement Division
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Potential Defendant: New York City Department of Environmental Protection (NYCDEP)

NPDES Permits:

NYC Water Pollution Control Plants (WPCPs)	SPDES No.
Wards Island	NY0026131
North River	NY0026247
Hunts Point	NY0026191
Newtown Creek	NY0026204
26th Ward	NY0026212
Coney Island	NY0026182
Red Hook	NY0027073
Owls Head	NY0026166
Tallman Island	NY0026239
Jamaica	NY0026115
Bowery Bay	NY0026158
Rockaway	NY0026221
Port Richmond	NY0026107
Oakwood Beach	NY0026174

Statutes: Sections 301, 308, 309 and 504 of the Clean Water Act ("CWA")
33 U.S.C. §§ 1311, 1318, 1319, and 1342

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1. Synopsis of Investigation

This investigation report presents claims against the New York City Department of Environmental Protection (NYCDEP, the Department) regarding (1) the occurrence of illegal discharges, (2) violations of provisions contained in the Department's State Pollutant Discharge Elimination System (SPDES) permits, (3) failure to properly operate and maintain the Department's sewer system and (4) failure to develop a Long-Term Control Plan (LTCP) in accordance with SPDES permits, Administrative Consent Orders, and EPA's Combined Sewer Overflow (CSO) Control Policy. The claims presented in this report were identified from inspections conducted by EPA's contractor, Science Applications International Corporation (SAIC), in 2006, 2007, and 2008; NYCDEP's operational and non-compliance databases; EPA's Integrated Compliance Information System (ICIS) database; public documents prepared by NYCDEP and others; and a review of NYCDEP's 11 individual Waterbody/Watershed Plans (PLANS). The illegal discharges and instances of non-compliance constitute violations of the Clean Water Act (CWA), as amended, 42 U.S.C. § 1251 *et seq.,* and regulations promulgated thereunder.

It is important to note that additional data and information that could further substantiate or expand the claims made in this report are believed to be in the possession of the New York State Department of Environmental Conservation (NYSDEC). NYSDEC was not contacted or visited in an attempt to obtain additional data or information. Therefore, in several instances the report identifies known or suspected data gaps and attempts to identify the likely sources, extent, and usefulness of additional data sources.

The network of separate sanitary, combined, and storm sewer systems and water pollution control plants in the NYCDEP system is extensive. Likewise, the volume and complexity of completed and planned technical work products, studies, and reports prepared by NYCDEP, NYSDEC, and other organizations with respect to combined sewer overflows is also considerable. Therefore, although this report attempts to provide a comprehensive and concise assessment of NYCDEP's compliance with the CWA and NYCDEP's SPDES permits, it is probable that additional instances of non-compliance and associated claims would likely be identified during the course of further field inspections, data review and analysis. It is estimated the field inspections conducted in 2006 and 2007, which resulted in identifying more than 100 instances of non-compliance, included an evaluation of only a portion of NYCDEP's sewer system. Additional investigations, including the acquisition of additional data, are therefore warranted.

This investigation report identifies significant and longstanding violations of the CWA. Specifically, the report addresses five major issues: (1) instances of potential non-compliance identified during past inspections; (2) documented evidence of non-compliance as reported by NYCDEP; (3) violations of SPDES permits, as reported in EPA's Integrated Compliance Information System (ICIS); (4) failure to fully implement the Nine Minimum Controls (NMCs) and their corresponding best management practices (BMPs), which are included in the SPDES permits; and (5) failure to properly operate and maintain the NYCDEP's combined and separate sanitary sewer systems and water pollution control plants (WPCPs). This investigation report also details serious concerns regarding NYCDEP's adherence to EPA's 1994 CSO Control Policy (CSO Control Policy), including the failure to develop an LTCP in accordance with the SPDES permits

and applicable Administrative Consent Orders. These issues are summarized below; Section 4, Description of Violations and Claims, provides further details.

Instances of Potential Non-Compliance Identified During Past Inspections

EPA conducted inspections of a small portion of NYCDEP-owned and -operated facilities during 2006, 2007, and 2008. These inspections identified widespread and significant concerns estimated to represent more than 100 unique instances of potential non-compliance. The potential non-compliance identified during the inspections can be grouped into four categories: (1) failure to properly operate and maintain the collection system, including the operation of pump stations, deficient sewer cleaning and inspection, and safety concerns; (2) failure to maintain compliance with SPDES permit effluent limitations and reporting requirements; (3) deficiencies regarding implementation of the Nine Minimum Controls; and (4) failure to adhere to schedules and implementation requirements contained in the SPDES permits. Most of the instances of potential non-compliance identified during the EPA inspections point to systemic problems, and therefore additional instances of potential non-compliance are believed to exist throughout the entire NYCDEP service area.

Documented Evidence of Non-Compliance as Reported by NYCDEP

NYCDEP maintains a city-wide non-compliance database that it uses to capture data on all types of sewer system releases and other non-compliance events at NYCDEP-owned and -operated facilities. The non-compliance database also documents that 1309 instances of non-compliance have been reported to NYSDEC and other appropriate or

required regulatory agencies. An electronic copy of the non-compliance database was provided to EPA for the period January 1, 2001 through November 30, 2008. A review of NYCDEP‘s non-compliance database reveals the following:

- A total of 1309 non-compliance events occurred during the period of review. NYCDEP categorizes the non-compliance events with more than 50 individual “type” designations.
- Six types of events—(1) Additional Wet Weather Combined Sewer Overflow, (2) Raw Sewage Bypass, (3) Wet Weather Bypass, (4) Illegal Connection, (5) Sludge Spill, and (6) Low Chlorine Residual—were predominant, representing 88 percent of the total non-compliance events.
- The number of non-compliance events has steadily increased from 61 events in 2001 to 244 events in 2008.

Records from NYCDEP’s non-compliance database were summarized and compiled into the following table.

Analysis of NYCDEP's Non-Compliance Database[1]

Year	No. of Non-Compliance Events
2001	61
2002	63
2003	65
2004	199
2005	192
2006	245
2007	240
2008	244
Grand Total	**1309**

Top Six Non-Compliance Event Categories	
Additional Wet Weather Combined Sewer Overflow (CSO)	578
Raw Sewage Bypass	319
Wet Weather Bypass	140
Illegal Connection	37
Sludge Spill	37
Low Chlorine Residual	36
All Other Categories*	162
**Comprised of 50 different sub-categories.*	

WPCPs with Most Non-Compliance Events	
Bowery Bay	251
Wards Island	245
Newtown Creek	123
Tallmans Island	116
26th Ward	112

The instances of non-compliance constitute a range of SPDES permit violations including a failure to implement Best Management Practices (BMPs) as required by the SPDES permits. Many of the events are illegal spills, discharges, and releases of sludge and raw sewage to "waters of the United States." NYCDEP refers to these illegal discharges as 'bypasses.' Under section 301(a) of the CWA, it is unlawful for any person to discharge any pollutant from a point source into "waters of the United States" except in compliance with an NPDES permit. NYCDEP does not have an NPDES permit that authorizes the discharge of raw sewage bypasses (i.e., spills). Therefore, any sewage spill

[1] Period of Record is January 1, 2001 through November 30, 2008

or discharge from NYCDEP's collection system or WPCP that flows to "waters of the United States" constitutes a violation of the CWA.

Violations of SPDES Permits

Discharge Monitoring Report data for the period January 2001 through December 2008, for all 14 WPCPs were retrieved from EPA's ICIS database and analyzed for this investigation report. The data retrieval identified a total of 1,600 individual SPDES permit violations during the retrieval period, consisting of more than 400 effluent limit exceedances and 1,000 reporting and non-receipt violations.

Failure to Fully Implement the Nine Minimum Controls

SPDES permit Item VIII, Best Management Practices for Combined Sewer Overflows, establishes requirements for the implementation of 13 CSO BMPs, which are generally (but not entirely) consistent with the NMCs. These 13 BMPs are designed to implement operation and maintenance procedures; use the existing treatment facility and collection system to the maximum extent practicable; and implement sewer design, replacement, and drainage planning to maximize pollutant capture and minimize water quality impacts from CSOs. Item VIII.14 of the SPDES permits requires NYCDEP to prepare and submit a Best Management Practices Annual Report (BMP Annual Report) that summarizes implementation of the 13 BMPs. The 2006 and 2007 BMP Annual Reports were obtained from NYCDEP and were analyzed as a component of this investigation. The annual report reviews and the field inspections document significant and widespread instances of potential non-compliance with respect to NYCDEP's implementation of BMPs 1, 2, and 7, each of which is summarized below and discussed in detail in Section 4.A.4.2 of this report.

BMP 1, *CSO Maintenance and Inspection* - The data, as reported in the 2005–2007 BMP Annual Reports, clearly demonstrate widespread failures to maintain CSO tidegates to prevent infiltration of seawater into the collection system such that the WPCP influent concentration of chlorides does not exceed a 12-month rolling average of 400 mg/L. In 2006 and 2007, 35 percent and 42 percent of the WPCPs, respectively, failed to achieve compliance with the chloride limit.

BMP 2, *Maximize Use of Collection System for Storage* - Considerable evidence documents excessive sediment accumulations in NYCDEP's sewer system exist which reduces the hydraulic capacity of the sewer system, thereby increasing the occurrence of CSOs.

BMP 7, *Control of Floatable and Settleable Solids* - NYCDEP's floatables control program comprises the following: (1) catch basin repair and maintenance; (2) catch basin retrofitting; (3) booming, skimming, and netting: and (4) an institutional, regulatory, and public education component. A review of BMP Annual Reports and past site inspections identified instances of potential non-compliance and areas of concern with all four components. The most significant instances were related to the implementation and effectiveness of the booming, skimming, and netting program component.

Failure to Properly Operate and Maintain the Combined and Separate Sanitary Sewer Systems and WPCPs

Observations and evidence acquired from past inspections, NYCDEP's BMP Annual Reports and non-compliance database, sewer complaints received and responded to, and other publicly available information document a failure to properly operate and

maintain the disposal facilities that are installed or used by the permittee to achieve compliance with the conditions of the SPDES permit. Primary areas of concern include pump station operation and maintenance, sewer cleaning and inspection, and the occurrence of sewer blockages. From data collected and interviews with NYCDEP personnel, NYCDEP has a reactive, not proactive, maintenance program.

For example, based on data provided by NYCDEP, it is estimated that NYCDEP field crews responded to more than 200,000 sewer backup complaints and 70,000 sewer blockages over the seven-year period from 2001 to 2008. Blockages of a sewer system can be prevented with effective cleaning and inspection programs.

Failure to Develop an LTCP in Accordance with SPDES Permits, Administrative Consent Orders, and EPA's CSO Control Policy

As part of the CSO Control Policy published in the *Federal Register* in 1994, EPA required permittees to prepare Long Term Control Plans (LTCPs) to address CSOs. LTCP's have been effective tools in the ongoing national effort to reduce the water quality impacts of combined sewer overflows. New York City Department of Environmental Protection (NYCDEP) is required by law to prepare an LTCP. Historically, NYCDEP has undertaken a process to address CSOs with years of facility planning and consent decree-mandated facility projects. With the advent of the NYCDEP LTCP Project, it has developed a matrix of eighteen watershed delineations and eleven alternatives analyses in an attempt to develop its LTCP. The NYCDEP and other city offices state that the goal of the LTCP Project is to improve water quality, reduce CSOs, and achieve the fishable and swimmable goals of the Clean Water Act: however following a careful analysis of the alternatives presented, it appears that

NYCDEP has chosen the path of least resistance and least cost, often stating the relative difficulty of a project, high cost, or the lack of appropriate sites rather than choosing a path that meets its goal of reducing CSOs and improving water quality. The LTCP Project consists of eleven Waterbody/Watershed Plans. A review of the eleven plans indicates that although an array of extensive control measures were evaluated; additional significant CSO volume controls were rejected.

Additional Areas of Concern

Past inspections, analysis, review of documents, and investigative information point to numerous areas of concern that warrant additional scrutiny by EPA. Those areas of concern are related to the operation of the WPCPs and the combined and separate sewer systems. In an effort to provide clarity and ease of review, many of those areas of concern have been purposefully excluded from the body of this report and some of the more significant items are instead listed in Section 4.C.

2. Statutory Basis of Investigation

A. Jurisdiction and Venue

EPA may bring an action for injunctive relief and penalties pursuant to Section 309(b) and (d) of the Clean Water Act (CWA), 33 U.S.C. § 1319(b) and (d). Section 309(b) grants jurisdiction to United States District Courts for civil actions brought under this subsection in the district in which the defendant is located, resides, or is doing business. The violations in this case occurred within the five boroughs of New York City—the Bronx (Bronx County), Brooklyn (Kings County), Manhattan (New York County), Queens (Queens County), and Staten Island (Richmond County). The City and Counties are within the jurisdiction of the federal district court for both the Southern and Eastern Districts of New York. See 28 U.S.C. § 1391(c).

B. Substantive Requirements of Law

Section 301(a) of the CWA prohibits the discharge of pollutants by any person except in compliance with, among other things, a National Pollutant Discharge Elimination System (NPDES) permit authorizing such discharge issued in conformance with Section 402 of the act. EPA has approved the State's request to administer an NPDES permit program in New York pursuant to Section 402(b) of the CWA. Section 309(d) of the act provides that any person who violates Section 301 of the act, or any condition or limitation of an NPDES permit issued under Section 402 of the act, shall be subject to a civil penalty not to exceed $25,000 per day for each such violation prior to January 1, 1997. Pursuant to the Debt Collection Improvement Act of 1996, and EPA's implementing regulations at Title 40 of the *Code of Federal Regulations* (CFR) Part 27,

the maximum statutory penalty for any such violation occurring on or after January 1, 1997, is $27,500 per day per violation. Pursuant to the Civil Monetary Penalty Inflation Adjustment Rule of 2004, as mandated by the Debt Collection Improvement Act of 1996, and EPA's implementing regulations at 40 CFR Parts 19 and 27, the maximum statutory penalty for any such violation occurring on or after March 16, 2004, is $32,500 per day per violation. For violations occurring after the latest update to the penalty regulation, which is after January 12, 2009, the amount per day is $37,500.

Section 402(q)(1) of the Clean Water Act, 33 U.S.C. § 1342(q)(1), specifically addresses CSOs:

> Each permit, order, or decree issued pursuant to this Chapter December 21, 2000 for a discharge from a municipal combined storm and sanitary sewer shall conform Combined Sewer Overflow Policy signed by the Administrator on April 11, 1994….

The CSO Policy, published by EPA on April 19, 1994, provides for a phased process to bring communities with a CSS into compliance with technology-based and water-quality based requirements of the Clean Water Act. The four key components of the policy are as follows:

- cities should immediately eliminate dry weather overflows, with initiation by the EPA of enforcement against cities with continuing dry weather overflows
- cities should be fully implementing NMCs by January 1, 1997, through an appropriate enforceable mechanism (either a permit or an order);
- cities should develop a LTCP as soon as practicable, generally within two years. The long term controls should be sufficient to meet water quality standards; and
- the LTCP should be expeditiously implemented through an enforceable mechanism, with a fixed date implementation schedule.

C. NPDES Permit Requirements

The New York State Department of Environmental Conservation (NYSDEC) has issued State Pollutant Discharge Elimination System (SPDES) permits to the New York

City Department of Environmental Protection (NYCDEP), which are listed in Table 1. Twelve of the draft permits were issued in February 2005; the Bowery Bay draft permit was issued in April 2006, and the Oakwood Beach permit was issued in January 2001. With the exception of the Oakwood Beach permit, all the SPDES permits are current. The format, structure, and requirements of the individual SPDES permits are very similar, and the permits generally include the following requirements:

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[2] Table of Contents from SPDES Permit No. NY-0026212 26th Ward Water Pollution Control Plant

The format and structure of the Oakwood Beach SPDES permit (SPDES Permit No. NY-0026174) is different from the outline above because the Oakwood Beach Water Pollution Control Plant (WPCP) services only a separately sewered drainage area on Staten Island.

The SPDES permits authorize NYCDEP to discharge combined sewage during precipitation events from 472 combined sewer overflows (CSOs) that discharge mainly to the Hudson River, East River, and Jamaica Bay. It should be noted that NYCDEP has continued to identify additional CSOs as a component of their Shoreline Survey program required pursuant to SPDES Item XIV.c and the current number is believed to be more than 490 CSOs. For the purposes of this investigation report, SPDES permit items III, VIII, IX, and XII are especially pertinent.

Table 1. NYCDEP Individual SPDES Permits for New York City Water Pollution Control Plants

NYC WPCPs	SPDES No.
Wards Island	NY0026131
North River	NY0026247
Hunts Point	NY0026191
Newtown Creek	NY0026204
26th Ward	NY0026212
Coney Island	NY0026182
Red Hook	NY0027073
Owls Head	NY0026166
Tallman Island	NY0026239
Jamaica	NY0026115
Bowery Bay	NY0026158
Rockaway	NY0026221
Port Richmond	NY0026107
Oakwood Beach	NY0026174

3. Potential Defendant

A. New York City Department of Environmental Protection

The NYCDEP is responsible for the operation and maintenance of New York City's entire wastewater collection and treatment system and compliance with the terms and conditions of applicable SPDES permits and requirements under the Clean Water Act. The New York City collection system includes 6,344 miles of public sewer pipe, 130,000 catch basins or inlets, 5,000 seepage basins, more than 472 permitted combined sewer overflow (CSO) discharge points, 93 pump stations, and 14 water pollution control plants (WPCPs). New York City's wastewater treatment facilities, along with their associated design capacities and served drainage areas, are listed in Table 2.

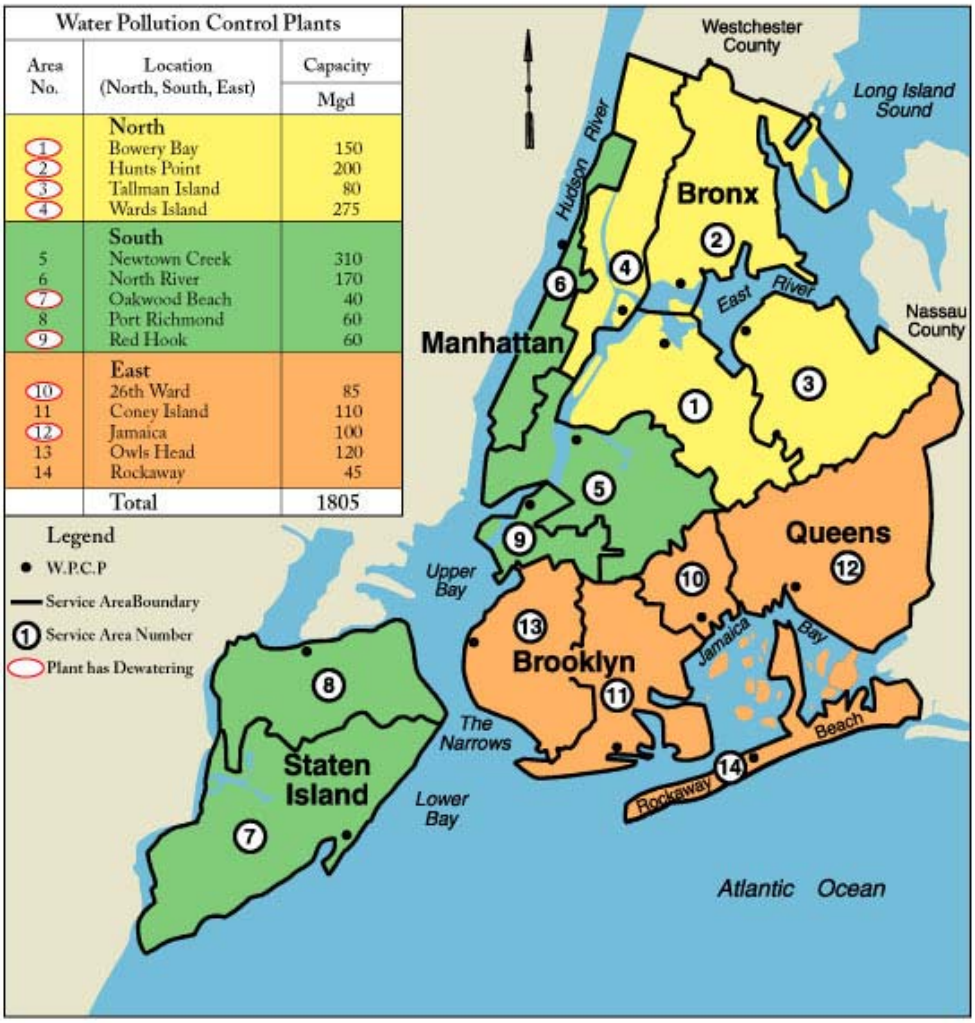
Table 2. New York City Water Pollution Control Plants[3]

Treatment Plant	Design Capacity (MGD)	Population Served	Associated Drainage Area (acres)
26th Ward	85	283,428	5,907 (eastern portion of Brooklyn)
Bowery Bay	150	848,328	15,203 (northeastern Queens)
Coney Island	110	596,326	15,087 (south & central Brooklyn)
Hunts Point	200	684,569	16,664 (eastern Bronx)
Jamaica	100	728,123	Southern Queens
Newtown Creek	310	1,068,012	15,656 (south & east Manhattan, northeast Brooklyn, west Queens)
North River	170	588,772	6,030 (west Manhattan)
Oakwood Beach	39.9	244,918	10,779 (south Staten Island)
Rockaway	45	90,474	6,259 (Rockaway)
Owls Head	120	758,007	12,947 (west Brooklyn)
Wards Island	275	1,061,558	12,056 (west Bronx, upper east Manhattan)
Tallman Island	80	410,812	16,860 (northeast Queens)
Port Richmond	60	198,128	9,665 (northern Staten Island)
Red Hook	60	192,050	3,200 (northwest Brooklyn)

[3] Information obtained from SAIC inspection dated December 11, 2008.

Figure 1 depicts the NYDEP drainage areas and WPCP locations.

New York City Plant Locations and Capacities



20 New York City's Wastewater Treatment System

NYCDEP has reported that the average daily discharge from these 14 plants is approximately 1.4 billion gallons. The annual average CSO volume discharged is

reported by NYCDEP to be approximately 32 billion gallons per year. Attachment 1 presents all of NYCDEP's SPDES permits, each of which includes a list of that sewershed's permitted CSO discharge locations.

NYCDEP operates as a department within the City of New York government. NYCDEP's collection system is the joint responsibility of the Bureau of Wastewater Treatment (BWT) and the Bureau of Water and Sewer Operations (BWSO). The BWT, which has a total staff of almost 2,000, is responsible for the wastewater pump stations, the CSO regulators, and the interceptor sewer system, in addition to the 14 WPCPs. BWT is also responsible for overseeing operation of New York City's floatables skimming vessels by the City's boom maintenance and cleaning contractor. The BWSO is responsible for the operation and maintenance of the combined and separate street mains and the cleaning and maintenance of the combined and separate street mains and the cleaning and maintenance of New York City's 130,000 catch basins.[4]

B. The State of New York

Section 309(e) of the CWA requires that states must be joined in all civil actions in which a municipality is a party, 33 U.S.C. § 1319 (e). However, under EPA's April 10, 2005, Guidelines for Federal Enforcement in CSO/SSO Cases, states are encouraged to participate as a co-plaintiff with EPA. Such collaboration helps to ensure that comprehensive and complete injunctive relief is obtained, and that compliance is ultimately achieved. The role of the State in the case is a significant issue due to the second clause of Section 309(e) which makes states potentially liable for judgments against cities.

[4] Information obtained from SAIC inspection dated December 11, 2008

4. Description of Violations and Claims

This section of the investigation report presents claims against the New York City Department of Environmental Protection (NYCDEP, the Department) regarding (1) the occurrence of illegal discharges, violations of provisions contained within the Department's State Pollutant Discharge Elimination System (SPDES) permits, and failure to properly operate and maintain the Department's sewer system and (2) failure to develop a Long-Term Control Plan (LTCP) in accordance with the SPDES permits, Administrative Consent Orders, and EPA's Combined Sewer Overflow (CSO) Control Policy. The violations and claims are presented in the following two sections.

A. Occurrence of Illegal Discharges, Violations of Provisions Contained in SPDES Permits, and Failure to Properly Operate and Maintain the Sewer System

This section of the investigation report presents significant and widespread non-compliance and areas of concern with respect to NYCDEP's SPDES permits. It documents NYCDEP's overall failure to adequately operate and maintain its combined and separate sanitary sewer systems. The section is organized as follows:

1. Past EPA Compliance Inspections
2. NYCDEP's Non-Compliance Database and Reporting
    2.1 Raw Sewage Bypasses Reported to the Interstate Environmental Commission (IEC)
3. Sentinel Monitoring Program and Ongoing Dry Weather Discharges
4. Compliance with SPDES Permits
    4.1 ICIS Summary Data
        i. Non-Reporting, Non-Receipt, and Effluent Limitation Exceedance Violations

4.2 Failure to Fully Implement the Nine Minimum Controls
- ii. BMP 1 - CSO Maintenance and Inspection
- iii. BMP 2 - Maximize Use of Collection System for Storage
- iv. BMP 7 - Control of Floatable and Settleable Solids

4.3 Failure to Comply with Chapter X - Division of Water, Subpart 750-02: Operating in Accordance with SPDES Permit Requirements
- v. Sewer Cleaning and Inspection
- vi. Pump Station Operation and Maintenance
- vii. Sewer Backup Complaints Received and Associated Resolution

1. Past EPA Compliance Inspections

EPA Headquarters, EPA Region 2, and EPA's contractor, Science Applications International Corporation (SAIC), conducted CSO compliance inspections of portions of NYCDEP's collection system on three occasions: October 24–25, 2006; January 9–11, 2007; and September 5 and 8, 2008. The EPA inspections were conducted within the collection systems that feed the Hunts Point, 26th Ward, Coney Island, Tallman Island, Jamaica, Bowery Bay, and Rockaway Water Pollution Control Plants (WPCPs). In addition, brief inspections of portions of the Bowery Bay, Coney Island, Hunts Point, Tallman Island, and 26th Ward WPCPs were performed. The inspections identified widespread and significant concerns estimated to represent more than 100 unique instances of potential non-compliance.

The potential non-compliance identified during the inspections can be grouped into four categories: (1) failure to properly operate and maintain the collection system, including the operation of pump stations, deficient sewer cleaning and inspection, and safety concerns; (2) failure to maintain compliance with SPDES permit effluent limitations and reporting requirements; (3) deficiencies regarding implementation of the Nine Minimum Controls; and (4) failure to adhere to schedules and implementation

requirements contained in the SPDES permits. A summary of potential non-compliance events and areas of concern identified during the 2006 and 2007 inspections is provided in Table 3. Most of the instances of potential non-compliance identified during the EPA inspections point to systemic problems, and therefore additional instances of potential non-compliance are believed to exist throughout the entire NYCDEP service area.

This section of the investigation report starts with the results of the past inspections because those inspections identified a wide range of issues that point to systemic failure to properly operate and maintain the WPCPs and the combined and separate sewer systems. Subsequent sections provide additional evidence to substantiate claims and, in some cases, to elevate an area of concern to potential non-compliance. The size of NYCDEP's system precludes EPA's completion of a truly comprehensive inspection (or inspections), and therefore this investigation report uses the information gained during the past inspections, information provided by NYCDEP, and publicly available information in an attempt to fully describe the current condition of the system and whether NYCDEP has adhered to its SPDES permit requirements.

In addition, past inspections, analysis, review of documents, and investigative information point to numerous areas of concern that warrant additional scrutiny by EPA. Those areas of concern are related to the operation of the WPCPs and the combined and separate sewer systems. In an effort to provide clarity and ease of review, many of those areas of concern have been purposefully excluded from the body of this report and are instead listed in Section 4.C, Additional Areas of Concern.

Table 3. Summary of Findings and Recommendations from October 24–25, 2006, and January 9–11, 2007, EPA Inspections

11.1 POTENTIAL NON COMPLIANCE ITEMS[7]

11.1.1 New York City has failed to comply with the requirements of its NPDES permits to properly maintain its boom and netting systems. Boom systems are required to be maintained in accordance with Booming, Skimming and Netting provisions of the Permit. The inspections identified booms in Hunts Point, Flushing Creek (Tallman Island WPCP), Thurston Basin (Jamaica WPCP) and others that were not maintained as required by the permit. Specific issues noted were gaps due to boom end hang-ups, missing boom sections and torn booms. In several cases the installation of the booms was such as to make successful capture of floatables unlikely.

11.1.2 New York City has failed to maintain and upgrade its WPCPs as necessary to allow compliance with the flow maximization requirements of its NPDES permits. As a result, New York City has reported over 225 instances of failure to maximize flow through its WPCPs over the past three years (July 2004 through June 2007). These incidents have occurred at the Bowery Bay, Hunts Point, Wards Island, Owls Head, Newtown Creek, and 26th Ward WPCPs.

11.1.3 New York City has failed to properly operate and maintain its pump stations. Perhaps the most disturbing failure is the failure to maintain a minimum level of safety in those stations. A number of stations were observed to have non-functional ventilation systems, and most stations were observed to be in less than adequate condition. Examples of the issues observed;

11.1.3.1 Throgs Neck Pump Station - This pump station is in generally poor condition and is reported to be scheduled for an overhaul 'within five years." Temporary generators are used to provide backup power, and an electrical manhole in the station was observed to be open to the weather and partially flooded.

11.1.3.2 24th Street Pump Station – This station has deficient dry well wiring, poorly designed overhead crane and emergency power connection (both awkward to use), and a non-functional ventilation system. In addition, a recent "upgrade" to smaller main pumps has resulted in an increased number of pump blockages.

11.1.3.3 Old Douglaston Pump Station – This station was noted to have failed compressors, non-functional ventilation, and an extremely outdated motor control system.

11.1.3.4 New Douglaston Pump Station – This station is kept in service through the use of a complex temporary piping and pumping system that poses a risk to users of the park in which the station is located (the trailer-mounted pump drive unit is not within a fenced enclosure). Also, this station has non-functional ventilation, and in spite of reportedly serving a separate sewered area, an upstream overflow point (in an adjacent manhole).

[7] Potential Non-Compliance and Areas of Concern findings as presented in SAIC Inspection report dated December 2007.

Table 3. Summary of Findings and Recommendations from October 24–25, 2006, and January 9–11, 2007, EPA Inspections

NYCDEP should be required to carry out a comprehensive pump station condition assessment, and to undertake necessary improvements, upgrades and complete station rehabilitations on an expedited schedule. NYCDEP should in particular be required to repair all non-functional pump station ventilation systems as soon as possible.

11.1.4 New York City has failed to properly operate and maintain its collection system, and maximize both in-system storage and its ability to convey flow to treatment, by failing to adequately remove accumulations of sediment from its combined sewer system. As described in Section 3 of this report, a DWO resulted from an accumulation of sediment estimated at over 4,000 cubic yards of material in a large "outfall" sewer. This accumulation was so large that NYCDEP could only budget to remove approximately half of the accumulation (2,000 yards) in a single fiscal year. What is particularly disturbing about this incident is that an accumulation of that magnitude took NYCDEP by surprise. This suggests that similar issues may exist in NYCDEP's system, and in fact at least one other similar situation is evident in NYCDEP's maintenance records.

11.1.5 NYCDEP has failed to complete and place in service the Flushing CSO Storage Facility in accordance with the schedule in its NYSDEC Agreed Order. This delay was the result of a failure on the part of NYCDEP's contractor several years prior to the required completion date which resulted in a flood and subsequent damage to a substantial amount of equipment that had been installed in the partially completed facility. NYCDEP should have forced its contractor to undertake the necessary efforts to "make up" the resulting delay, so as to stay on schedule.

11.1.6 NYCDEP has failed to properly maintain the headworks of the Coney Island WPCP by allowing a gate position sensor to remain inoperable for an indeterminate but apparently extended period of time. This failure lead to one of the influent gates being left in the incorrect position following a rainfall event. The incorrect gate placement was observed by the EPA/SASIC Inspection Team

11.1.7 NYCDEP's WPCP-specific wet weather operating plans lack sufficient quantifiable operating and performance criteria. Numeric criteria are necessary for consistent plan implementation, and adequate assessment of plan effectiveness.

11.1.8 NYCDEP has failed to maintain signs at every CSO as required by its SPDES permit. Ay TI-011, the signpost was broken and the sign leaning against an adjacent fence at an angle that made reading of the sign difficult. Signs were noted to be missing entirely at the upper end of Bergen Basin (JA-006?)and at BBHL-005 (adjacent to the Elmjack Little League field).

11.2 AREAS OF CONCERN

11.2.1 NYCDEP's reports indicate that it has generally complied with the catch basin assessment/cleaning/rehabilitation program required by its Agreed Order. An extensive inspection of catch basins was not carried out by the EPA/SAIC Inspection Team; however, observation of random catch basins such as that shown on Photo 30, above

Table 3. Summary of Findings and Recommendations from October 24–25, 2006, and January 9–11, 2007, EPA Inspections

raised concerns about the adequacy of the program. A particular concern was the statement made by field personal that most catch basin cleaning takes place on a responsive rather than proactive basis.

11.2.2 NYCDEP does not have a comprehensive sewer inspection program. NYCDEP estimates that it CCTVs approximately "1 to 2%" of its system annually. Such a limited program does not allow NYCDEP to have a complete understanding of the current condition of its entire system. An adequate program would involve the evaluation of something between 5 and 10% of the system annually, and would support the development of a system-wide asset management approach to sewer cleaning, sediment accumulation removal, and sewer rehabilitation.

11.2.3 NYCDEP could more fully implement NMC/BMP #5, "Prohibition of DWOs" by addressing its remaining regulators with small diameter underflow pipes and or limited freeboard. Several such regulators were noted in the course of the inspection activities (e.g., TI 057, TI-012, BBLL-029).

11.2.4 Several stormwater management issues were noted in the course of the CSO facilities inspections. These included the debris and sediment accumulation noted at a drainage point next to the Throg Neck Pump Station and construction-related sediment control issues noted at the Paerdagat CSO Storage Facility site. In addition, flow was noted in stormwater barrel of the diversion structure located at 108th and 37th Streets during dry weather (NYCDEP staff were unaware of any testing to determine whether the observed flow contained any sanitary sewage).

11.2.5 NYCDEP has removed the original influent bar screens at the Paerdegat Pump Station, and now manually removes debris and floatables from the station's wet well using the overhead crane and a slotted bucket. The decision to not replace the screens has likely reduced the operational reliability of this pump station. A number of other NYCDEP pump stations have manually cleaned bar screens; these screens have a tendency to blind during significant wet weather events.

11.2.6 The Bowery Bay Vortex facility appears to currently provide very little environmental benefit. NYCDEP should undertake a study of whether there are any practical ways that this expensive, large facility can be modified so as to provide more meaningful environmental benefit.

11.2.7 The language used on the CSO sign used by NYCDEP, while compliant with the SPDES permit requirement, fails to adequately inform potential users of the water bodies of the risks posed by NYCDEP's CSO discharges. In addition, the small "plaque" type signs used in the park areas are even less effective due to their intentionally unobtrusive size and placement.

11.2.8 "CSO" BBHL-002 at the headworks of the Bowery Bay WPCP, although included in the SPDES permit as a CSO, appears more appropriately categorized as a headworks bypass point.

Table 3. Summary of Findings and Recommendations from October 24–25, 2006, and January 9–11, 2007, EPA Inspections

11.2.9	The City's current CSO inspection program targets "priority" outfalls for inspection once per week, with other outfalls being inspected only once per month. Approximately 105 CSOs are reported to have telemetry installed. For any CSO without telemetry, once per week should be a minimum frequency for all CSOs with any history of dry weather Overflow.
11.2.10	A substantial unidentified discharge was noted north of Outfall 004 on Hendrix Creek by the 26th Ward WPCP. No SPDES sign was visible near the outfall.
11.2.11	In 2005 NYCDEP had five plants in which the influent chloride concentration exceeded the SPDES-specified standard, thus signifying inadequate control of receiving water intrusion. At two of these plants (Rockaway and Coney Island) sewer rehabilitation and separation projects are reportedly necessary (and underway) to address the chloride level) but at the other three plants (26th Ward, Newtown Creek & Port Richmond) only increased tide gate maintenance was needed to address the unacceptable chloride levels. This latter situation indicates that NYCDEP needs to be more aggressive in its gate maintenance efforts, needs to carry out more frequent influent chloride monitoring, and needs to follow up on high chloride numbers in a timely and aggressive manner.
11.2.12	NYCDEP's Sentinel Monitoring Program appears to consist largely of dry weather monitoring. It is suggested that NYCDEP carry out a more representative mix of monitoring events, so as to provide a more representative picture of water quality in its receiving streams.
11.2.13	NYCDEP field crews appear to use several sewer cleaners (both solvent-based and caustic-based) to help break up difficult sewer blockages. It does not appear that NYCDEP prohibits the use of such cleaners upstream of CSOs during discharge events.

The EPA inspection team provided an exit interview to NYCDEP personnel following the inspections, and ultimately NYCDEP received a copy of the December 2007 inspection report. Based on the results of these inspections, the EPA inspection team performed a follow-up inspection to assess NYCDEP's progress in responding to the identified instances of potential non-compliance and areas of concern. The follow-up inspection was conducted on September 5 and 8, 2008. Program areas and locations of concern from the prior inspections were revisited to assess NYCDEP's progress. In some instances progress could be demonstrated; however, in many instances previously identified deficient conditions remained unchanged. A summary of findings from the

follow-up inspection is provided in Table 4. It should be noted that the findings in Table 4 are preliminary and subject to change as EPA completes a final inspection report.

Table 4-Summary of Findings and Recommendations from September 5 and 8, 2008 EPA Inspection

SUMMARY OF FINDINGS AND RECOMMENDATIONS[8]

NYCDEP's maintenance program continues to be primarily reactive/corrective in nature, rather than preventative. As noted above, this year NYCDEP is reportedly issuing $8 million dollars in site-specific sewer cleaning contracts, as well as instituting a program of yearly flow monitoring contracts. Nonetheless, NYCDEP needs to undertake an aggressive sewer system characterization effort. NYCDEP should carry out a comprehensive digital inspection program, with the goal of televising the entire system within a ten year program. Such a program will identify large trunk sewers and interceptors with significant sediment accumulations, as well as allow NYCDEP to move forward in the development of an asset management program.

NYCDEP should identify "priority" catch basins and inlets, and then clean those basins on an appropriately aggressive schedule.

NYCDEP continues to operate pump stations in an unacceptable condition. NYCDEP should implement a system-wide pump station evaluation and rehabilitation program, with the goal of rehabilitating all sub-standard pump stations within a 5 to 7 year period.

NYCDEP's transitioning of the catch basin inspection program from a consultant to in-house staff without a commensurate increase in field staff may overload the BWSO field crews.

As noted in the December 2007 Inspection Report, NYCDEP expects to expend approximately $1.5 billion on CSO control in the years 2008 through 2017. For a combined collection system serving approximately 12 million customers, this is a relatively limited expenditure on CSO control. NYCDEP should provide its LTCP and all supporting documents, so as to allow EPA to assess the adequacy of its intended CSO controls.

As previously stated, many of the following sections substantiate the claims presented above, as appropriate.

2. NYCDEP Non-Compliance Database

NYCDEP maintains a city-wide non-compliance database that it uses to capture

[8] Summary of Findings and Recommendations from September 5 and 8, 2008 EPA Inspection

data on all types of sewer system releases and other non-compliance events at NYCDEP-owned and -operated facilities. The non-compliance database also documents instances of non-compliance that have been reported to NYSDEC and other appropriate or required regulatory agencies. An electronic copy of the non-compliance database was provided to EPA for records between the period of January 1, 2001, through November 30, 2008. A review of NYCDEP‘s non-compliance database reveals the following:

- A total of 1309 non-compliance events occurred during the period January 1, 2001, through November 30, 2008. NYCDEP categorizes the non-compliance events with more than 50 individual “type” designations.
- Six types of events—(1) Additional Wet Weather Combined Sewer Overflow, (2) Raw Sewage Bypass, (3) Wet Weather Bypass, (4) Illegal Connection, (5) Sludge Spill, and (6) Low Chlorine Residual—were predominant, representing 88 percent of the total non-compliance events.
- The number of non-compliance events has steadily increased from 61 events in 2001 to 244 events in 2008.

Records from NYCDEP’s non-compliance database were summarized and compiled into Table 5.

Table 5. Analysis of NYCDEP's Non-Compliance Database[9]

Year	No. of Non-Compliance Events
2001	61
2002	63
2003	65
2004	199
2005	192
2006	245
2007	240
2008	244
Grand Total	**1309**

Top Six Non-Compliance Event Categories	
Additional Wet Weather Combined Sewer Overflow (CSO)	578
Raw Sewage Bypass	319
Wet Weather Bypass	140
Illegal Connection	37
Sludge Spill	37
Low Chlorine Residual	36
All Other Categories*	162
**Comprised of 50 different sub-categories.*	

WPCPs with Most Non-Compliance Events	
Bowery Bay	251
Wards Island	245
Newtown Creek	123
Tallmans Island	116
26th Ward	112

On the basis of the database, the six types of non-compliance events can be further described as follows:

Additional Wet Weather Combined Sewer Overflow accounts for 44 percent of the bypass total. The occurrence of these 578 bypasses demonstrates a range of violations including a failure to implement Best Management Practices (BMPs) 1 and 2, CSO Maintenance and Inspection and Maximize Use of Collection System for Storage, respectively. Note: SPDES permit conditions based on the 13 BMPs are discussed more fully below in Section 4.A.4.2.NYCDEP uses this type to describe the following kinds of

[9] Period of Record is January 1, 2001 through November 30, 2008

events:

- Example 1 – "As per our pervious correspondence, Main Sewage Pump (MSP) No. 3 at Newtown Creek is out of service due to a hole between the suction line and the pump, therefore the plant could not pump two times design dry weather flow (620 MGD). The influent gates at Newtown Creek were throttled from 11:45 PM on 11/29 to 5:20 AM on 11/30 and the MSPs had their gates throttled from 11:10 PM on 11/29 to 4:40 AM on 11/30. The maximum flow during this bypass event was 611 MGD." (11/29/05, Newtown Creek)

- Example 2 – "A blockage of sewer debris and grease occurred in the branch interceptor causing the bypass. The blockage was discovered after the severe rainstorm on the morning of 8/8/07, therefore the event is considered a raw sewage bypass with additional wet weather." (8/8/07, Tallman Island)

- Example 3 – "The plant pumped a maximum of 401 MGD during the wet weather event on 6/27/05. The plant was not able to sustain pumping of two times design dry weather flow due to problems with the Bronx and Manhattan Grit Chambers. The Bronx Grit Chamber was unable to open Channel No.2 due to a defective influent gate mechanism. The Manhattan Grit Chamber lost Channel No. 2 due to a problem with the climber screen. The gates for the Bronx and Manhattan Grit Chambers were throttled in order to protect equipment from rising water level." (6/27/05, Wards Island)

Raw Sewage Bypass accounts for 18 percent of the total events. The occurrence of these 235 bypass events demonstrates a failure to implement BMPs 1 and 2, CSO Maintenance and Inspection and Maximize Use of Collection System for Storage, respectively. Additionally, under section 301(a) of the CWA, it is unlawful for any person to discharge any pollutant from a point source into "waters of the United States" except in compliance with an NPDES permit. NYCDEP does not have an NPDES permit that authorizes the discharge of raw sewage bypasses (e.g., spills). Therefore, any sewage spill from NYCDEP's collection system or POTW that flows to "waters of the United States" constitutes a violation of the CWA. NYCDEP uses "raw sewage bypass" to describe the following types of events:

- Example 1 – "A crack on a sanitary sewer line was found discharging into storm sewer." (11/23/01, North River)

- Example 2 – "On December 1, 2006, Collection Facility North (CFN) personnel discovered a blockage in the drop pipe of Regulator No. 21 that caused a dry weather discharge into the East River." (12/1/06, North River)

- Example 3 – "On 9/19/08, Collection Facilities South (CFS) personnel responded to a 311 call about a discharge at Oakwood Beach Outfall No. 676. A blockage in the sanitary sewer line was discovered, which caused the bypass." (9/19/08, Oakwood Beach)

Wet Weather Bypass accounts for approximately 11 percent of the total events. The occurrence of these 140 bypass events demonstrates a failure to implement BMP 3 - Maximize Flow to Publicly Owned Treatment Works. NYCDEP uses "wet weather bypass" to describe the following kinds of events:

- Example 1 – "As previously stated in recent Bypass reports, the present construction sequencing has now required the closing of Primary Tanks No. 5 and No. 6, Aerator No. 6, and the Eastside Final Tanks. This combination has restricted the flow hydraulically." (8/24/04, Hunts Point)
- Example 2 – "On 3/20/07, an unusually warm day caused an increased rate of snow melting which led to a high flow. The snow was produced by a snowstorm on 3/16/07. The Low Level influent gates had to be throttled to protect the Low Level climber screens, …" (3/20/07, Bowery Bay)
- Example 3 – "The plant could not pump 2 times dry flow due to a primary tank being out of service." (9/28/04, Port Richmond)

Illegal Connection, Sludge Spill, and Low Chlorine Residual each account for approximately 3 percent of the total events. The occurrence of these events demonstrate a failure to properly operate and maintain the collection and/or the WPCPs. NYCDEP uses "illegal connection," "sludge spill," and "low chlorine residual" to describe the following kinds of events:

- Example 1 – "2869 W 21st Street, Brooklyn, NY had an illegal connection to the storm sewer outfall Coney Island 665. Possibly six more houses illegaly connected to storm sewer." (8/9/05, Coney Island)
- Example 2 – "Due to cracks in the Jamaica to 26th Ward sludge force main, sludge leaked out into the parking lot. Some of the sludge went into the catch basin and eventually into Bergin Basin." (3/9/01, Jamaica Bay)
- Example 3 – "At 9:30 AM the chlorine residual dropped to 0.04 mg/l due to a malfunction with the hypo pump. Immediately the emergency hypo drip was turned on. The chlorine residual came back up to 0.49 mg/l at 10:00AM. The plant's target residual is 0.8 mg/l…" (9/21/05, 26th Ward)

Table 6. provides a more detailed presentation of the non-compliance data.

Table 6. Bypass Database Summary January 2001 through November 2008

	2001	2002	2003	2004	2005	2006	2007	2008*	Grand Total
Total WPCP Bypass Events*	**61**	**63**	**65**	**199**	**192**	**245**	**240**	**244**	**1309**

*Through November 30, 2008

	26th Ward	Bowery Bay	Coney Island	Hunts Point	Jamaica Bay	Newtown Creek	North River	Oakwood Beach	Owls Head	Port Richmond	Red Hook	Rockaway	Tallmans Island	Wards Island	**Grand Total**
Total Events per WPCP	112	251	77	99	45	123	51	18	65	52	22	33	116	245	**1309**
Additional Wet Weather Combined Sewer Overflow (CSO)	82	157	54	25	16	85	8		22	1	3	3	5	117 [(d)]	578
Raw Sewage Bypass	4	41	8	23	9	6	17	9	14	33	2	5		64 [(b)]	235
Wet Weather Bypass	7	37	3	32		6	2		4[(b)]	6[(b)]	12	2	3	26 [(b)]	140
Raw Sewage Spill		1											84		85
Illegal Connection		3	8	3	6			2	4	2		3	4	2	37
Sludge Spill	4	2	1	4	5	2	1		4	2			6	6	37
Low Chlorine Residual	6	1			1	8	8	1	4	2	2			3	36
Hypo Interruption	2	1	1	2	1	5	2	4	2	2	1	2	2	6	33
Premature Secondary Bypass		1			1		1		3			16		6	28
OTHER[(a)]	2			1		2		1	1				4	3	14
Dry Weather Secondary Bypass					1		1				1			5	8
Hypo Interruption and Low Chlorine Residual			1	1		2			2			1			7
Intermittemnt Wet Weather Bypass							6								6
Wet Weather	1									1		1	1	1	5
No Type Listed	0	2		1			1								4
Treatment Reduction		1					1				1			1	4
Wet Weather Bypass (Snow Melting)	1	1				1							1		4
Additional Secondary Bypass									3						3
Hypo Spill					1					1				1	3
Illegal Discharge			1		1										2
Planned Shutdown	2														2
Possible Illegal Connections		1					1								2
Raw Sewage Bypass Mixed with Chlorinated Drinking Water						2									2
Sewage Bypass during wet weather						1								1	2
Aerator Effluent													1		1
CancelledIllegal Connection													1		1
Centrate Spill				1											1
Chlorinated raw sewage due to needed emergency rep		1													1
Chlorination Interruption				1											1
Clean Water Mixed with Oil Spill									1						1
Combined Sewer Overflow							1								1
Combined Sewer Overflow due to Excess Freshwater														1	1
Contaminated Water Spill				1											1
Direct Discharge								1							1
Dry Weather Discharge				1											1
Dry Weather Premature Secondary Bypass					1										1
Dry Weather Release of Groundwater and Combined Sewer													1 [(C)]		1
Effluent Water Spill		1													1
Ferric Chloride Spill					1										1
Groundwater						1									1
Hose water mixed with grout						1									1
Low Chlorine Residual during wet weather							1								1
Partial Treatment Reduction	1														1
Possible Secondary Bypass/Sludge Spill				1											1
Potential Bypass										1					1
Potential Dry Weather Secondary Bypass				1											1

Possible Secondary Bypass/Sludge Spill				1											1
Potential Bypass										1					1
Potential Dry Weather Secondary Bypass				1											1
Potential Illegal Connection													1		1
Primary Effluent Spill				1											1
Raw Sewage Bypass Mixed with Drinking Water														1	1
Raw Sewage Bypass with Chlorinated Water														1	1
Sewer Back-Up										1					1
Unchlorinated Effluent Water Discharge (Broken Line)					1										1
Unknown													1		1
UNUSUAL EVENT (CSO)									1						1
Unusual Event (Partial Chlorination Interruption)													1		1
Wet Weather Incident						1									1

Note: This is a rough summary based only on these categories. Some of the illegal connections also involve raw sewage, etc.

[a] *OTHER can be specified as follows for the given WPCP*

Thickner Splitter Box Spill	26th Ward
Unconfirmed bypass	26th Ward
Centrate	Hunt Point
Washwater from concrete trucks & a low chlorine residual	Newtown Creek
Sewer Overflow	Oakwood Beach
Aeration Tank Foam Spill	Owls Head
Combined Sewer Overflow	Tallman Island
(Snow Melt)	Tallman Island
Mixed liquor Spill	Tallman Island
Hydrolic Oil Spill	Wards Island
Combined Sewer Overflow	Wards Island
Chlorine Interruption	Wards Island

[b] *1 is also noted as Additional Wet Weather Combined Sewer Overflow (CSO).*

[c] *Wet Weather Release of Excess Combined Sewage*

[d] *See Example below*

Example of Database Entries for Footnoted Records

Start Date	Drainage Area	Type	Other Spill
8/25/2006	Wards Island	Additional Wet Weather Combined Sewer	Mistakenly not reported
6/27/2007	Wards Island	Additional Wet Weather Combined Sewer	Raw Sewage Bypass Also

2.1 Raw Sewage Bypasses Reported to the Interstate Environmental Commission (IEC)

The IEC's mission is to protect and enhance environmental quality through cooperation, regulation, coordination, and mutual dialogue between government and citizens in the Tri-State Region of New York, New Jersey, and Connecticut. As part of its mission, the IEC produces an annual report that highlights its completed activities and initiatives within the Tri-State Region. A standing component of the annual report is a summary of the activities of the Regional Bypass Workgroup that includes an analysis of the reported bypasses during the given year. Annual reports for the years 2005, 2006, and 2007 were obtained from IEC's Web site at **www.iec-nynjct.org** and were reviewed for this investigation report. Table 7 provides a summary of reported bypasses. *It should be noted that New York City and specifically NYCDEP are responsible for greater than 98 percent of the bypasses in the Tri-State Region each year.*

Table 7. Summary of IEC Regional Bypass Workgroup Data for 2005 – 2007						
	Bypass Events					
	2005	% of Total	2006	% of Total	2007	% of Total
Connecticut	2	1.0%	0	1.0%	0	0.0%
New Jersey	1	0.5%	1	0.5%	2	0.8%
New York	**193**	**98.5%**	**219**	**99.5%**	**235**	**99.2%**
Note: All New York events occurred in DEC - Region 2; New York City						

Bypass Event Causes						
	2005	% of Total	2006	% of Total	2007	% of Total
Rain	119	60.71%	151	68.64%	163	68.78%
Equipment Failures	21	10.71%	18	8.18%	19	8.02%
Disinfection Problems	16	8.16%	10	4.55%	9	3.80%
Blockages	11	5.61%	26	11.82%	15	6.33%
Power Outages	8	4.08%	8	3.64%	10	4.22%
Illegal Connections	7	3.57%	0	--	0	--
Broken Pipes/Lines	0	--	0	--	9	3.80%
Miscellaneous (force main failures, sludge spills, etc.)	14	7.14%	7	3.18%	12	5.06%

Table 7 shows that NYCDEP is responsible for nearly all the bypasses reported in the past three years. Figure 2 is an excerpt from the IEC's 2007 Annual Report regarding the Regional Bypass Workgroup. It should be noted that a direct comparison between the bypasses reported to IEC and the bypasses shown in NYCDEP's non-compliance database was not feasible because the data used to compile the IEC report were not readily available. In addition, the mechanism by which IEC obtains its information was not clear when this investigation report was developed.

Figure 2. Excerpt from IEC 2007 Annual Report

The number of reported bypasses from 2004 through 2007 have been substantially higher than previous years. This may be primarily due to rainfall. In 2004 and 2005, the hurricane seasons were extremely active and 2006 and 2007 were considered "wet years" — with the rainfall total over 10 inches above the yearly average. Also, 2007 had more "storms" or high intensity rain events, which lead to more bypasses. Additionally, the hydraulic capacity of several plants was diminished due to construction upgrades. The majority of the New York City and northern New Jersey collection systems are comprised of combined sewers and, when there is rain, the flows to the WPCPs increase. If the flow is greater than the plant design, part of the flow is "throttled". This throttled flow is considered to be a bypass. For the 2007 reporting period, there were 163 wet weather bypass events reported to the RBWG. For 2007, wet weather bypasses account for 69% of the reported events. For 2003, less than 10% of the reported bypasses were caused by wet weather. This year, all of the New York events occurred in NYS DEC - Region 2 which encompasses the five boroughs of New York City. It should be noted that the majority of the treatment facilities, pump stations, regulators and gravity sewers and force mains that exist in this region are in New York City.

During the reporting period, all bypass event details were disseminated in a timely fashion by e-mail. For the most part, any missing data from the event was reported by conventional mail subsequent to repairs. Minor events or ongoing investigations of illegal discharges were reported by mail. Volumes bypassed ranged from as little as under 1,000 gallons of sewage to wet weather bypasses that were over a 100 MG. During 2007, the common causes for bypass events were rain (163), equipment failures (19), disinfection problems (9), blockages (15), power outages (10), broken pipes/lines (9) and 12 events were caused by miscellaneous reasons including foaming issues and human errors. The breakdown is displayed on the pie chart. The majority of the 237 bypass events were comprised of raw sewage (215). Other types of bypasses included disinfected wastewater with primary treatment, secondary treatment with no disinfection, low chlorine residual, and sludge spills. Bypass events that had the potential to impact primary recreational waters occurred during the period May 25th through September 3, 2007, which represents the "official" bathing season (Memorial Day weekend to Labor Day). There were 85 releases, or 35.9 % of the total, during this period. During 2007, the waterways impacted by bypass events are shown on the pie chart on the next page.

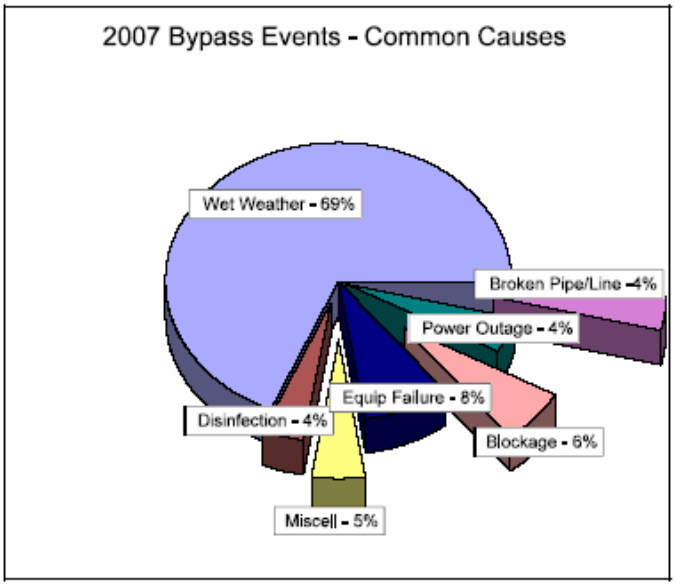
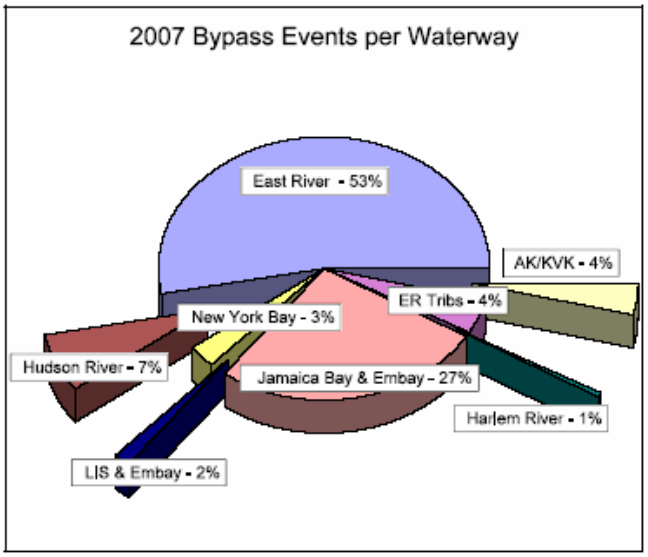


Figure 2. Excerpt from IEC 2007 Annual Report

Since its inception, the Workgroup has been using the current version of the Regional Bypass Model. While the bypass model has been a valuable tool in predicting the extent of bypasses over the years, it has its limitations. The group now is working with a contractor to update the model for the 2008 beach season. Some of the proposed upgrades to the new model include the (1) use of calibrated enterococcus and total/fecal coliform kinetics; (2) a spatial domain encompassing NY/NJ Harbor, LIS, the New Jersey coastline south to Cape May and the Passaic/Hackensack/ Raritan Rivers; (3) discharges into any segment; (4) multiple discharges; (5) time of discharge with proper position in tidal cycle and temperature conditions; (6) temperature assignment; (7) specific duration and quantity; (8) conservative substance, i.e., heavy metal release or first assumption for oil spill; (9) background conditions such as wet weather; and (10) viewing options such as temporal profiles in any segment, global snapshots or animation.



3. Sentinel Monitoring Program

Under the SPDES permits, NYCDEP performs a sentinel monitoring program at 80 ambient monitoring stations as agreed upon by NYSDEC and NYCDEP. The requirements include dry weather sampling and commencement of an investigation of landside activities if warranted. Specifically, "if an untreated dry weather discharge is identified, permittee must act in accordance with Section 2.a of the permit."[10] Each year NYCDEP is required to produce a report that includes all "findings, analysis, data, sample results, sampling dates, dates of corresponding shoreline surveys, and proposed

[10] Item XII.3.c Sentinel Monitoring from SPDES Permit No. NY- 0026212 issued for 26th Ward WPCP.

changes to base-line numbers (if necessary) to NYSDEC by June 30th of each succeeding year.[11]" As part of this investigation, the 2006 and 2007 Sentinel Monitoring Annual Reports were reviewed. Table 8 provides a summary of the identified occurrences of illegal dry weather discharges to receiving waters in New York City. The analysis documents that although NYCDEP has been prudent and effective in identifying and eliminating historical discharges, significant dry weather discharges totaling approximately 135 million gallons (MG) continue and NYCDEP was unsuccessful in reducing the volume over the past two years. It should be noted that BMP 5 of the SPDES permits prohibit dry weather overflows from the combined sewer system and are to be promptly abated and reported to NYSDEC.

Table 8 - Analysis of 2006 and 2007 Sentinel Monitoring Program Data

2006 Discharge Point Abatement Investigation

*1991–1993 Shoreline Survey Contaminated Discharge Identification		Flow Rate (MGD)	Volume per Year (gal)	Discharge Abatement Rate by Number of Discharges
Number of Discharge Points Identified	360	4.12	1,503,800,000	84.72%
Number of Discharge Points Abated	305	3.65	1,332,250,000	Discharge Abatement Rate by Daily Flow Rate
Remaining Discharges	55	0.47	171,550,000	88.59%
*Note: Shoreline Survey identified 3,906 outfalls—448 CSO, 397 storm and other				

[11] Item XII.3.f Sentinel Monitoring from SPDES Permit No. NY- 0026212 issued for 26th Ward WPCP.

2006 Discharge Point Abatement Investigation		
NYCDEP Contaminated Discharge Points		
10 Illegal Discharges	Flow Rate (MGD)	Volume per Year (gal)
	0.37	135,050,000
NYSDEC Contaminated Discharge Points		
	Flow Rate (MGD)	Volume per Year (gal)
45 Illegal Discharges	0.09	32,850,000

2007 Discharge Point Abatement Investigation				
*1998 - 2008 Shoreline Survey Contaminated Discharge Identification		Flow Rate (MGD)	Volume per Year (gal)	Discharge Abatement Rate by Number of Discharges
Number of Discharge Points Identified	363	4.15	1,514,750,000	85.12%
Number of Discharges Abated	309	3.9	1,423,500,000	Discharge Abatement Rate by Daily Flow Rate
Remaining Discharges	54	0.25	91,250,000	93.98%
*Note: Shoreline Survey identified 3,776 outfalls—433 CSO, 349 storm and other				

2007 Discharge Point Abatement Investigation		
NYCDEP Contaminated Discharge Points		
9 Illegal Discharges	Flow Rate (MGD)	Volume per Year (gal)
	0.37	135,050,000
NYSDEC Contaminated Discharge Points		
45 Illegal Discharges	Flow Rate (MGD)	Volume per Year (gal)
	0.16	58,400,000

The above tables show that NYCDEP was not able to reduce the volume of illegal discharges during the two-year period. The actual source of the 0.37-MGD recurring flow is not evident upon examination of the 2006 and 2007 Sentinel Monitoring Reports. Nonetheless, the reports do demonstrate numerous instances in which NYCDEP's enforcement process and authority were inadequate to effectively terminate the ongoing discharge of sewage.

For example, the 2006 Sentinel Monitoring Report for the third quarter describes a dry weather discharge from the JAM-005 outfall caused by 36 illegal sanitary sewer connections to the storm sewer. Thirty-two of the properties complied with removal orders; however, four homes (two with no sanitary sewer fronting the property) were subject to enforcement proceedings to determine the next course of action. The investigation was still ongoing during the fourth quarter of 2007. Several compliance orders, including Notice of Violation Orders, have been issued to the owners of two of the properties. The illegal connections and subsequent dry weather discharge from JAM-005 have not been eliminated, and legal proceedings are ongoing as of January 24, 2008.

In another example from the first-quarter 2006 Sentinel Monitoring Report, a dry weather discharge from the CI-664 outfall was caused by six properties with illegal sanitary sewer connections to the storm sewer that ultimately discharges to Coney Island Creek. Two of the homes had no sanitary sewer fronting their property. The investigation was turned over to NYSDEC for enforcement proceedings to determine the next course of action (phase II action). The status of the investigation of CI-644 remained unchanged when it was again described in the third-quarter 2007 Sentinel Monitoring Report.

4. Failure to Comply with SPDES Permits

A comprehensive listing of NYCDEP's 14 SPDES permits, coverage areas, and adoption and expiration dates, along with a representative table of contents, was provided in Section 2 of this investigation report. Thirteen of the 14 SPDES permits are similar in format and content (Oakwood Beach, which serves a separate sewer system, excluded), but there may be minute or small differences among the 13 permits that are not readily identifiable. Therefore, this subsection of the report uses SPDES Permit No. NY-

0026212, issued for the 26th Ward WPCP, and its citations as a surrogate for the 13 SPDES permits that cover the combined sewer areas of New York City.

4.1 ICIS Summary Data

NYCDEP is required to report monthly operating data for each of the 14 WPCPs to NYSDEC in the form of Discharge Monitoring Reports (DMRs). Upon receipt, NYSDEC enters the monthly operating data and all compliance and enforcement activities into EPA's Integrated Compliance Information System (ICIS) database. ICIS data for the period January 1, 2001, through November 30, 2008, for all 14 WPCPs were retrieved and analyzed for this investigation report. The data retrieval identified a total of 1,600 individual SPDES permit violations during the retrieval period. Table 9 provides a summary of the ICIS compliance data.

Table 9. ICIS Summary Data for NYCDEP WPCPs for the Period January 1, 2001, through December 4, 2008

Violation Summary

DMR Non-Receipt Violation (D80 & D90)	1015	Violation Percentage	
Total Effluent Violations (E90)	412	Total Effluent Violations	25.75%
Schedule Violation (C10-C40)	173	Total DMR Non-Receipt Violations	63.44%
Total Number of Violations	**1600**	Violations Leading to Enforcement Action	17.00%
Total Compliance Monitoring Activities	2196		
Total Enforcement Actions	272		
*Please see below for violation code definitions			

Water Pollution Control Plant (WPCP)	Number of Violations per WPCP	Percent Violations per WPCP
Rockaway NY0026221	23	1%
Owls Head NY0026166	25	2%
26th Ward NY0026212	35	2%
Oakwood Beach NY0026174	38	2%
Coney Island NY0026182	43	3%
North River NY0026247	79	5%
Port Richmond NY0026107	89	6%
Bowery Bay NY0026158	139	9%
Hunts Point NY002191	172	11%
Tallman Island NY0026239	181	11%
Newton Creek NY0026204	190	12%
Jamaica NY0026115	191	12%
Wards Island NY0026131	226	14%

Violation Code Definitions

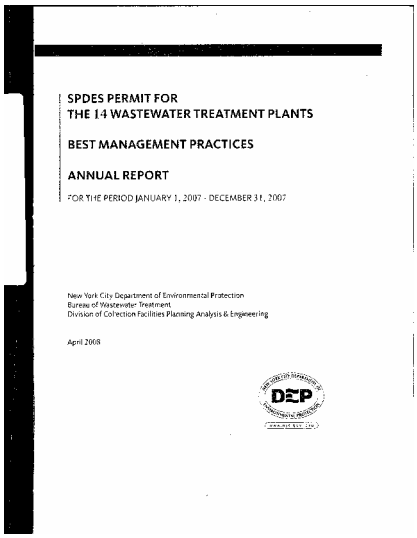
DMR Non-Receipt	D80	Required Monitoring DMR Value overdue to
DMR Non-Receipt	D90	Limited Value overdue to regulatory authority
Effluent	E90	Reported DMR Value exceeds maximum or
Schedule	C10	Schedule Event Reported Late
Schedule	C20	Schedule Event achieved late but reported

4.2 Failure to Fully Implement the Nine Minimum Controls

The CSO Control Policy requires that CSO communities implement nine best management practices (BMPs) as "minimum," interim controls; they are referred to hereafter as the Nine Minimum Controls (NMCs). The intent of the NMCs is to minimize CSO impacts until the LTCP is developed and implemented. SPDES permit Item VIII, Best Management Practices for Combined Sewer Overflows, establishes requirements for the implementation of 13 CSO BMPs, which are generally (but not entirely) consistent with the NMCs. These 13 BMPs are designed to implement operation and maintenance procedures; use the existing treatment facility and collection system to the maximum

extent practicable; and implement sewer design, replacement, and drainage planning to maximize pollutant capture and minimize water quality impacts from CSOs. The 13 BMPs are as follows:

BMP 1: CSO Maintenance and Inspection
BMP 2: Maximize Use of Collection System for Storage
BMP 3: Maximize Flow to Publicly Owned Treatment Works
BMP 4: Wet Weather Operating Plan
BMP 5: Prohibition of Dry Weather Overflows
BMP 6: Industrial Pretreatment
BMP 7: Control of Floatable and Settleable Solids
BMP 8: Combined Sewer System Replacement
BMP 9: Combined Sewer System Extension
BMP 10: Sewer Connection and Extension Prohibitions
BMP 11: Septage and Hauled Waste
BMP 12: Control of Runoff
BMP 13: Public Notification


SPDES PERMIT FOR
THE 14 WASTEWATER TREATMENT PLANTS

BEST MANAGEMENT PRACTICES

ANNUAL REPORT

FOR THE PERIOD JANUARY 1, 2007 - DECEMBER 31, 2007

New York City Department of Environmental Protection
Bureau of Wastewater Treatment
Division of Collection Facilities Planning Analysis & Engineering

April 2008

Item VIII.14 of the SPDES permits requires NYCDEP to prepare and submit a Best Management Practices Annual Report that summarizes implementation of the 13 BMPs. The 2006 and 2007 Best Management Practices Annual Reports were obtained from NYCDEP and were analyzed as a component of this investigation. In addition, the EPA inspection team evaluated BMP implementation during the site inspections conducted in 2006, 2007, and 2008. The annual report reviews and the field inspections document significant and widespread instances of potential non-compliance with respect to NYCDEP's implementation of BMPs 1, 2, and 7, each of which is discussed separately below. In addition, several areas of concern that merit further investigation were identified and these, too, are presented below.

BMP 1: CSO Maintenance and Inspection Program

The SPDES permits contain the following requirement:[12]

> (a) The permittee shall develop and implement a written maintenance and inspection program for all CSOs listed beginning on page 3 of this permit. This program shall include all regulators tributary to these CSOs. This is to insure that no discharge or leakage occurs during dry weather and that the maximum amount of wet weather flow is conveyed to the WPCP for treatment. This program shall consist of scheduled inspections with required repair, cleaning and maintenance performed as needed to prevent dry weather overflow and leakage and ensure maximum wet weather flow is conveyed in accordance with CSO BMP # 4. Inspection reports shall contain a record of visual inspections, any observed flow, incidence of rain or snowmelt, condition of equipment and work required.
>
> (b) The permittee shall include in the maintenance and inspection program a plan to maintain CSO tidegates to prevent infiltration of seawater into the collection system such that the WPCF influent concentration of chlorides does not exceed a twelve month rolling average of 400 mg/l. The maintenance and inspection program shall specify corrective actions to be taken within twelve months of the influent chloride exceedance of 400 mg/l.

Table 10 provides a summary of influent chloride concentrations measured at each of the 14 WPCPs for the years 2006 and 2007, as provided in the 2006 and 2007 BMP Annual Reports.

Table 10. City Wide Chloride Concentration Average Report Summary

WPCP Name	Chloride Concentration 12 Month Rolling Avg (mg/L)	
	2006	2007
Wards Island	327	**404**
North River	174	263
Hunts Point	258	181
26th Ward	368	253

[12] Requirement VIII.1.(a) from SPDES Permit No. NY- 0026212 issued for 26th Ward WPCP.

Coney Island	**575**	**582**
Owls Head	195	159
Newtown Creek	**655**	**630**
Red Hook	**409**	**480**
Jamaica	207	203
Tallman Island	331	369
Bowery Bay	274	320
Rockaway[1]	**2580**	**2195**
Oakwood Beach	174	168
Port Richmond	**577**	**401**

Note: Chloride Concentration limit for WPCP is 400 mg/L

[1]Rockaway Average Limit Exceedance, 2006 to 2007 = 596.88%

	2006	**2007**
Number of WPCPs Exceeding Limit	**5 of 14**	**6 of 14**
Percent of WPCPs Exceeding Limit	**35.71%**	**42.86%**

Note: Percent Increase of Exceedances, 2006 to 2007 = 7.14%

The data, as reported in the 2005–2007 BMP Annual Reports, clearly demonstrate widespread failures to maintain CSO tidegates to prevent infiltration of seawater into the collection system such that the WPCP influent concentration of chlorides does not exceed a 12-month rolling average of 400 mg/L. In 2006 and 2007, 35 percent and 42 percent of the WPCPs, respectively, failed to achieve compliance with the chloride limit.

The following excerpt from the October 27, 2008, Notice of Violation letter from NYSDEC to NYCDEP addresses failures to fully implement the required BMPs. The full letter is provided as Attachment 2.

DEC issued the NOV after reviewing the information provided by DEP in the Waterbody/Watershed Facility Plans, the 2003 – 2006 annual BMP reports and numerous meetings. After reviewing the information, DEC concluded that DEP's sewer maintenance program is insufficient to maximize flow to the WPCPs or to maximize storage capacity in the sewer system. In addition, chronic exceedances of influent chloride levels at several WPCPs clearly illustrate that DEP's tide gate maintenance program is not effective and that mitigation efforts are not being undertaken on the schedule required by the permits.

Upon review of the 2007 BMP report, DEC notes that the following WPCPs continue to exceed the 12 month rolling average SPDES limit of 400 mg/l for chlorides many months of the year:

2007					
WI (6 of 12)	NC (12 of 12)	PR (4 of 12)	RK (12 of 12)	CI (11 of 12)	RH (6 of 12)
2006					
	NC (12 of 12)	PR (9 of 12)	RK (12 of 12)	CI (12 of 12)	RH (5 of 12)
2005					
TW (12 of 12)	NC (11 of 12)	PR (6 of 12)	RK (12 of 12)	CI (12 of 12)	
2004					
TW (12 of 12)	NC (10 of 12)	PR (9 of 12)	RK (12 of 12)	CI (4 of 12)	BB (8 of 12)
2003					
TW (12 of 12)	NC (11 of 12)	PR (6 of 12)	RK (12 of 12)	CI (12 of 12)	JA (8 of 12)

The Notice of Violation and the data provided for 2003, 2004, and 2005 clearly demonstrate that NYCDEP's maintenance and inspection personnel *chronically* fail to undertake corrective actions as required. The SPDES permit states that corrective action must be taken within 12 months of an influent chloride concentration above the 400-mg/L limit. For example, chloride exceedances have persisted at 4 of the 14 WPCPs for five consecutive years. During the recent EPA inspections performed in 2006, 2007, and 2008, NYCDEP could not provide evidence that it was taking steps to improve the effectiveness of its CSO maintenance and inspection program.

BMP 2 – Maximum Use of Collection System for Storage

The SPDES permits contain the following requirement:[13]

[13] Requirement VIII.2. from SPDES Permit No. NY- 0026212 issued for 26th Ward WPCP.

> The permittee shall optimize the collection system by operating and maintaining it to minimize the discharge of pollutants from CSOs. It is intended that the maximum amount of in-system storage capacity be used (without causing service backups) to minimize CSOs and convey the maximum amount of combined sewage to the treatment plant in accordance with Item 4 below. This shall be accomplished by an evaluation of the hydraulic capacity of the system but should also include a program of flushing or cleaning to prevent deposition of solids and the adjustment of regulators and weirs to maximize storage.

Considerable evidence that clearly documents that NYCDEP has failed to fully implement BMP 2 and its underlying requirements exists. As one example, Table 11 provides documentation of excessive sediment accumulations in NYCDEP's sewer system. Excessive sediment reduces the hydraulic capacity of the sewer system, thereby increasing the occurrence of CSOs.

Table 11. Examples and Documentation of Excessive Sediment Accumulations in the NYCDEP Sewer System
"New York City has failed to properly operate and maintain its collection system, and maximize both in-system storage and its ability to convey flow to treatment, by failing to adequately remove accumulations of sediment from its combined sewer system. As described in Section 3 of this report, a DWO resulted from an accumulation of sediment estimated at over 4,000 cubic yards of material in a large "outfall" sewer. This accumulation was so large that NYCDEP could only budget to remove approximately half of the accumulation (2,000 yards) in a single fiscal year. What is particularly disturbing about this incident is that an accumulation of that magnitude took NYCDEP by surprise. This suggests that similar issues may exist in NYCDEP's system, and in fact at least one other similar situation is evident in NYCDEP's maintenance records…"[14]
"Baseline conditions for the Bowery Bay sewer system were described previously in Section 3.5, and are repeated below. Table 7-4 presents an overview of the CSO discharge volume associated with the various outfalls as well as the number of annual CSO events. 1. …(*unrelated*) 2. …(*unrelated*) 3. Documented sedimentation in sewers."[15]

[14] From SAIC Inspection Report dated December 2007.
[15] Source: Flushing Bay WaterBody/WaterShed Report, Section 7 (p. 7-37).

Table 11. Examples and Documentation of Excessive Sediment Accumulations in the NYCDEP Sewer System
"Baseline conditions for the Tallman Island sewer system were described previously in Section 3.5, and are repeated below in Table 7-8. 1. …(*unrelated*) 2. …(*unrelated*) 3. Documented sedimentation in sewers."[16]
Flushing Bay and Flushing Creek, Bowery Bay WPCP on the west side of the bay **3.5.3 Baseline Design Condition** For the BB-HLI Model, the Baseline conditions parameters were as follows: 1. …(*unrelated*) 2. …(*unrelated*) 3. Documented sedimentation in sewers.
"…As part of the effort, the Bureau of Wastewater Treatment's Compliance Monitoring Section had awarded a contract to O'Brien & Gere Inc. of North America to explore, investigate and videotape the storm sewer upstream of HP-010, but the endeavor was unsuccessful due to waist-deep sediment in the sewer line."[17]
"The components of the 26th Ward portion of the Jamaica Bay and CSO Tributaries Waterbody/Watershed Facility Plan, as listed below, rely heavily on the Consent Order mandated controls: Remove sediment in sections of major sewers in Williams Street, Hegeman Avenue, and Flatlands Avenue;"
Jamaica Bay Waterbody/Watershed Report **3.2.1. 26th Ward WPCP Drainage Area** The low level and high level wet well were each designed to accept 42.5 MGD during dry weather and 85 MGD during wet weather conditions for a total of 170 MGD (i.e., 2DDWF). However, the low side generally receives greater flows than the high side, a condition attributed to tide gate leakage, groundwater infiltration, and excessive sediment deposition in the sewers. In addition, a weir that was constructed at the intersection of Milford and Dumont Streets within the sewer system diverts 3 MGD of dry weather flow from the high side to the low side. Tide gate leakage appears to have been largely eliminated, although overflow debris may obstruct a gate and prevent it from fully closing. Groundwater infiltration is an intrinsic problem in the area due to the shallow water table and relatively porous soils. Excessive sedimentation in the collection system has been a persistent issue in the 26th Ward service area, and its impact to hydraulics remains significant and appears to be an opportunity for improvement."

The following is an excerpt from an October 27, 2008, letter from NYSDEC regarding the issuance of a Notice of Violation to NYCDEP regarding failures to fully implement the required BMPs. The full letter is provided as Attachment 3.

[16] Source: Flushing Bay Waterbody/Watershed Report, Section 7 (p. 7-60).
[17] Sentinel Monitoring Report, 2006. HP–010, Bronx River & Lancombe Avenue, CSO-25 (p. 25).

DEP did not provide any information to the contrary at our March 12, 2008 meeting, where DEP presented additional information. Regardless of the number of times that regulators are inspected by DEP each month or whether or not the sewers are actually self-cleaning, it has been clearly documented that considerable amounts of grit and solids are deposited in the interceptor sewers, directly contributing to combined sewer overflow events, and that these deposits are not found during normal inspections and maintenance but only when sewer backups or failures occur. Additionally, the June 27, 2008 letter states that the scope of work for the closed circuit camera and sonar assessments being conducted by the new Interceptor Improvement Section was included in the 2007 BMP Report. It was not included, nor has it been provided, as agreed to by DEP at the March 12, 2008 meeting.

BMP 7: Control of Floatable and Settleable Solids

The SPDES permits contain the following requirement related to booming, skimming, and netting[18]:

> The discharge of floating solids, oil and grease, or solids of sewage origin which cause deposition in the receiving waters, is a violation of the NYS Narrative Water Quality Standards. The permittee shall implement the following best management practices in order to eliminate or minimize the discharge of these substances:
>
> c. **Booming, Skimming and Netting** - The permittee shall operate and maintain the floatable containment boom (or floatable containment netting) as applicable for the CSO outfalls listed in this permit. The in-water containment boom shall be inspected within 48 hours of a confirmed CSO event and, if necessary, cleared of floating debris. The permittee shall visually inspect floatable containment netting on a weekly basis and shall replace damaged or full netting bags as necessary.

NYCDEP's floatables control program comprises the following: (1) catch basin repair and maintenance; (2) catch basin retrofitting; (3) booming, skimming, and netting: and (4) an institutional, regulatory, and public education component. A review of BMP Annual Reports and past site inspections identified instances of potential non-compliance and areas of concern with all four components. The most significant instances were

[18] Requirement VIII.7.(c) from SPDES Permit No. NY- 0026212 issued for 26th Ward WPCP.

related to the implementation and effectiveness of the booming, skimming, and netting program component and included the following:

- NYCDEP's booming, netting, and skimming program covers only approximately 60,000 acres, or about 30 percent of the entire drainage area.

- NYCDEP's booming and netting program is composed of a modest set of 25 or 26 fixed-boom and net locations.

- Many of these booms are located directly within the receiving water, and NYCDEP inherently uses the receiving water as a continuation of its combined sewer system. If a boom fails, floatables are released.

- Of the 25 boom/net locations, one location (Bronx River) was responsible for 70 percent and 63 percent of the total floatables recovered in 2006 and 2007, respectively.

- In 2006, of the remaining 24 sites, 9 sites collected less than 5 cubic yards of material over the entire year and five sites collected no material at all.

- In 2007, of the remaining 25 sites, 7 sites collected less than 5 cubic yards of material over the entire year and one site collected no material at all.

- Open-water skimming accounted for less than 0.01 percent of the total material obtained in both 2006 and 2007.

- One of NYCDEP's open-water skimming vessels, the *Cormorant*, was out of service during all of calendar year 2006 and six months of 2007. (It is possible that the vessel was also out of service in 2005; the 2005 BMP Annual Report was not available for confirmation.)

- EPA site inspections identified significant and recurring lapses in maintenance that reduced the effectiveness of the control features.

Tables 12 and 13 provide data for citywide floatable material recovery in 2006 and 2007, respectively. Table 14 provides summary data from 2003 to 2007.

Table 12. Floatable Material Recovery Program Overview 2006 & 2007

	2006	**2007**
Total Volume of Floatables Collected	**1,703 yards^3**	**2,308.25 yards^3**
Combined Sewer Drainage Area	60,000 acres	60,000 acres
Boom Sites	20	21
Net Sites	5	5
Number of Sites Collecting 0 Cubic Yards of Floatables	5	1
Number of Sites Collecting > 0 and < 5 Cubic Yards	4	6
Total Sites Collecting < 5 Cubic Yards	**9**	**7**

Table 13. Citywide Floatable Material Recovery Report Summary 2006 & 2007				
	Collected Floatables			
	2006		2007	
Location	**Cubic Yards Collected**	**Percent of Total Collected**	**Cubic Yards Collected**	**Percent of Total Collected**
Bergen Basin	79.5	4.67%	132	5.72%
Bowery Bay	14.5	0.85%	14	0.61%
Bronx River	**1197**	**70.29%**	**1454**	**62.99%**
Bushwick Inlet	6.5	0.38%	14	0.61%
Clason Point	0	0.00%	1	0.04%
Coney Island Creek	15.5	0.91%	66	2.86%
Cryder's Lane	24	1.41%	25	1.08%
East Branch	21.5	1.26%	8.5	0.37%
English Kills	7.5	0.44%	22	0.95%
Flushing Bay CS1	1	0.06%	72	3.12%
Flushing Bay CS2	0.5	0.03%	3.5	0.15%
Flushing Creek 1	6	0.35%	7.5	0.32%
Flushing Creek 2	18	1.06%	16.5	0.71%
Fresh Creek	139	8.16%	132	5.72%
Gowanus Canal	0	0.00%	3.25	0.14%
Hendrix Creek	13	0.76%	13	0.56%
Hunts Point	0	0.00%	0	0.00%
Maspeth Creek	30	1.76%	43.5	1.88%
Owls Head	0	0.00%	40	1.73%
Paerdegat Basin	15	0.88%	78.5	3.40%
Redhook Intake 9B	33	1.94%	88.5	3.83%
Thurston Basin	46	2.70%	6.5	0.28%
Wallabout Channel 1	0.5	0.03%	2	0.09%
Wallabout Channel 2	3.5	0.21%	0.5	0.02%
Westchester Creek	0	0.00%	1	0.04%
Whale Creek	18	1.06%	25.5	1.10%
Open Water Areas	13.5	0.79%	38.00	1.65%
TOTALS	**1,703**	**100%**	**2,308.25**	**100%**

Table 14. Best Management Practices Annual Report Summary

Citywide Floatable Material Recovery Report Summary

Total Collected Floatable Material*

	2003	2004	2005	2006	2007
Number of Sites					
IFCP Permanent	21	21	21	22	22
IFCP Temporary	2	2	2	1	2
Other Sites	2	2	2	3	3
Total	25	25	25	26	27
Volume Collected (cubic yards)					
IFCP Permanent	1170	1460	1047.5	1614.5	2131.3
IFCP Temporary	5	2	3	18	25.5
Other Sites	167	32	80.25	70.5	151.5
Total	1342	1494	1130.8	1703	2308

*Note: Interim Floatables Containment Program (IFCP)
Temporary Sites are under evaluation to upgrade to permanent status.
Other sites - Redhook Intake Pier, Cryders Lane net, and open waters locations

NYCDEP provides summary statistics in its Annual BMP reports that demonstrate year-to-year improvement in the amount of floatable material recovered. It should be noted that the Bronx River Waterbody/Watershed Plan states that NYCDEP intends to use floatables control as the sole CSO control within the watershed. Based on the data provided above, this control already appears to be in place and effective at trapping floatable material.

4.3 Failure to Fully Comply with Chapter X - Division of Water, Subpart 750-02: Operating in Accordance with an SPDES Permit

All 14 SPDES permits refer to the New York State Water Code regarding the obligation and requirement to properly operate and maintain the collection system (referred to as a disposal system). Section 750-2.8, Disposal System Operation and Quality Control, requirements (2)–(6), specifically states:

> (2) The permittee shall, at all times, properly operate and maintain all disposal facilities, which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation

and maintenance also includes as a minimum, the following:

(i) A preventive/corrective maintenance program for all critical facilities and systems of treatment and control (or related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. A facility or system is critical if it contains process equipment that is essential for proper operation and necessary to achieve compliance with the applicable SPDES permit effluent limits;

(ii) Written procedures for operation and maintenance, training new operators, adequate laboratory controls and appropriate quality assurance. This provision requires the operation of installed backup or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

(3) When required under Part 650 of this Title, sufficient personnel meeting qualifications for operators of sewage treatment works as required therein and additional maintenance personnel shall be employed to satisfactorily operate and maintain the treatment works.

(4) The permittee shall not discharge floating solids or visible foam.

(5) The permittee and operator shall operate the wastewater treatment facility in such a manner as to minimize the discharge of pollutants to a degree that is achievable when compared to standard practices for operation of such wastewater treatment facilities.

(6) The permittee and operator shall operate the wastewater treatment facility in such a manner as to minimize odors and other nuisance conditions to a degree that is achievable when compared to standard practices for operation of such wastewater treatment facilities.

Observations and evidence acquired from past inspections, NYCDEP's BMP Annual Reports and Non-Compliance Database, sewer complaints received and responded to, and other publicly available information document a failure to comply with many of the provisions listed above. This subsection of the investigation reports presents information regarding a failure to properly operate and maintain the disposal facilities that are installed or used by the permittee to achieve compliance with the conditions of

the SPDES permit. Of the more than 100 instances of potential non-compliance cited in the December 2007 Inspection Report, 32 (23.7 percent) involved non-compliance at pump stations. Likewise, pump station bypasses accounted for 128 of 1,316 records, or 9.7 percent, in NYCDEP's non-compliance database for the time period January 1, 2001, through November 30, 2008. Table 15 lists select pump stations with more than one bypass between 2001 and 2008.

Table 15. NYCDEP Pump Stations with Recurring Bypasses

Wards Island	Tallman Island
235th Street (5 bypasses)	Clearview (10 bypasses)
248th Street (14 bypasses)	Old Douglaston (2 bypasses)
254th Street (15 bypasses)	New Douglaston (3 bypasses)
West 248th Street (6 bypasses)	24th Avenue (5)
Newtown Creek	**Coney Island**
13th Street (6 bypasses)	Paerdegat (3 bypasses)

Table 16 presents summary findings from the 2006/2007 EPA inspections, followed by observations made about these same conditions in September 2008.

Table 16. Operation and Maintenance Summary Findings from Past EPA Inspections

6.2 Sewer Cleaning and Inspection

In the prior inspection report, the following was noted:

> *"BWT staff acknowledged that there currently is no comprehensive large diameter sewer inspection program; however senior staff reported that New York City has formed a new section of BWT to carry out a $2 million dollar city-wide large diameter pipe inspection program. Senior NYCDEP staff also indicated that New York is currently carrying out a pilot force main inspection program.*
>
> *The Bureau of Water and Sewer Operations also carries out a cleaning and inspection program for the sewers upstream of the CSO regulators. Under two contracts, BWSO carried out the following amounts of sewer cleaning and CCTV*

Table 16. Operation and Maintenance Summary Findings from Past EPA Inspections

inspection in 2005:

- *Cleaning - 228,383 feet of sewer*
- *CCTV Inspection - 224,506 feet of sewer*

BWSO senior staff indicated that "almost all" CCTV inspection work is responsive in nature (i.e. problem-driven). Given the amount of sewer in the New York City collection system, these footages each represent less than 1% of the New York system being cleaned and televised per year; this equates to about a 150 year cleaning and televising cycle. BWSO senior staff noted that each year they request approximately $5 million in additional funding for the implementation of a more "CMOM-like" preventative maintenance program."

As noted above, NYCDEP is reportedly letting $8 million in site-specific cleaning contracts this year. Nonetheless, NYCDEP continues to lack an appropriate comprehensive sewer evaluation program.

6.3 Pump Stations

In the prior inspection report, the following was noted:

"As noted above, the 14 New York City service areas include a relatively small number of pump stations (93 total). During the initial senior staff interview, NYCDEP staff stated that NYCDEP replaces or rehabilitates its pump stations on an approximately twenty year cycle. As noted in Section 3 above, the EPA inspection team's observations indicate that pump station rehabilitation is not consistently taking place on a twenty year cycle, as the conditions of most of the stations inspected were not at all consistent with those that would be observed in stations rehabilitated or replaced within the past twenty years.

A specific safety issue noted in many of the pump stations was the lack of working ventilation. Apparently, a survey of pump station ventilation systems was carried out a number of years ago, which revealed that many stations had inadequate or failed ventilation systems. NYCDEP has failed to implement the recommendations of that survey; this failure poses a significant safety risk to the field staff that operate and maintain these pump stations. 6 NYCRR Part 750-2.8 requires proper Operation and Maintenance of facilities required to maintain compliance with the Permit and preventative maintenance."

NYCDEP appears to still be "behind" in its pump station rehabilitation/replacement program. The work on the Old Douglaston Pump Station upgrade was noted, and that on the Paerdegat Pump Station is reported to begin soon; however the extremely deficient "New" Douglaston Pump Station remains unaddressed. It is recommended that NYCDEP be requested to provide a list of all of its pump stations that identifies the stations year of initial construction, year of last MAJOR upgrade, and that describes in detail what that

Table 16. Operation and Maintenance Summary Findings from Past EPA Inspections

last upgrade included.

New Douglaston Pump Station: In the previous inspection, the EPA Team made the following observations:

> "*This station is located at the southern end of the Alley Pond Park. Because of the lack of working ventilation at this station, the EPA/SAIC did not enter the station. This station's pumps and controls are reportedly in very poor condition; as a result, NYCDEP staff leave "temporary/emergency" pumps and piping in place at this station. This emergency pumping equipment includes both submersible pumps that are activated by a high wet well condition and additional manually operated, hydraulically driven pump(s). The diesel driven hydraulic pump is parked outside the station fence, where it may constitute a hazard to users of the park (particularly children) and it is more vulnerable to vandalism. NYCDEP staff report that they have had no difficulties with vandalism of the unit. This pump station reportedly services a separate sewer system; nonetheless, the manhole just upstream of the station (which is located adjacent to the station) has an overflow. At the time of the inspection, no overflow was taking place, and the overflow appeared to have in excess of 10 feet of freeboard under dry weather conditions. NYCDEP failed to operate and maintain the ventilation system and pump station equipment as required by 6 NYCRR Part 750-2.8 In addition, NYCDEP shall provide the dates in the past three years, if any, in which there have been overflows from this separate sanitary system from the overflow point directly upstream from the pump station"*

The New Douglaston Pump Station, which serves a sanitary sewer area and has a rated capacity of 3.3 MGD, was observed to still be in the same condition as described above (see Photos 4 & 5). A project to upgrade the station has reportedly progressed to the 60% design level; however, the project was described as still waiting for funding. Once again, the EPA team noted the potential hazard posed by the location of temporary pump to park users and suggested the installation of temporary construction fencing. NYCDEP has continued to fail to operate and maintain the ventilation system and pump station equipment as required by 6 NYCRR Part 750-2.8

An effective sewer maintenance program is characterized by proactive cleaning, routine inspection, preventive defect repair, and a limited number of customer complaints. An effective preventive program identifies and addresses potential problems within the system before they manifest themselves as blockages, sewer collapses, and structural defects. A typical sewer crew spends most of its time maintaining the system

instead of responding to customer complaints. From the data collected and interviews with NYCDEP personnel, NYCDEP has a reactive, not proactive, maintenance program. Table 17 shows that NYCDEP receives approximately 20,000 or more sewer complaints per year and that the number of complaints has remained relatively stable from year to year. The vast majority of these complaints (nearly 90 percent) regard sewer backups.

Table 17. Sewer Complaints Received by NYCDEP's Bureau of Water and Sewer Operations

	2001	2002	2003	2004	2005	2006	2007	2008	Grand Total
SA - Sewer Backup	20,133	19,183	21,234	24,202	23,371	23,236	24,332	16,412	172,103
SA1 - Manhole Overflow	268	200	275	217	308	311	598	469	2,646
SA3 - Manhole Cover	919	690	1,318	1,604	2,024	2,059	1,750	1,454	11,818
SA4 - Catch Basin Grating Missing	361	392	439	601	545	585	594	482	3,999
SBR - Sewer Break	0	0	0	6	272	220	225	113	836
SE - Culvert Blocked/Needs Cleaning	49	48	87	118	92	142	277	207	1,020

It should be noted that Table 17 provides the number of complaints for only the top six sewer problem codes tracked by NYCDEP. Table 18 lists the complete set of sewer codes

Table 18. Sewer Problem Codes Maintained by BWSO

Sewer Problem Codes	Description
SA	Sewer Backup (use comments)
SA1	Manhole Overflow (use comments)
SA2	Manhole Cover Missing (Emergency)
SA3	Manhole Sunken/Damaged/Raised
SA4	Catch Basin Grating Missing
SB	Manhole Cover Broken/Making Noise
SB1	Manhole Sunken/Damaged/Raised
SB4	Plate Missing/Moved-Exposing Hole
SB5	Plate Noisy/Sunken/Raised
SBR	Sewer Break
SC	Catch Basin Clogged/Flooding (use comments)
SC1	Catch Basin Sunken/Damaged/Raised
SC2	Catch Basin Search
SC4	Defective/Missing Curb Piece
SC5	Catch Basin Connection Broken (For DEP internal use only)
SE	Culvert Blocked/Needs Cleaning
SG	Street Cave-In/Depression
SG1	Street Cave-In
SH	Highway Flooding
SJ	Street Flooding

The number of sewer backup complaints received is significant because a BWSO field crew must respond to each complaint. It was stated during the EPA inspections that BWSO crews are continuously responding to complaints and therefore have limited time

and resources available to conduct proactive cleaning and inspection (a situation also demonstrated by the very low percentage of the system cleaned each year). Furthermore, the inspections found that BWSO's plan to internalize the catch basin inspection and cleaning program will only exacerbate this limited-resource problem.

Sewer complaints by themselves are not a complete indicator of the current health of a sewer system. The disposition (or resolution) of the complaints is also an important indicator. For example, in a high-density urban area, multiple complaints might be received for one particular event. This process results in duplicate complaints. Problems might be found in the physical building or in its sewer lateral, and such problems are not the responsibility of the sewer agency. Table 19 presents the resolution of complaints in the Borough of Queens during the seven-year period from January 2001 through December 2008. BWSO personnel provided the data during the December 2008 site visit, and EPA's request was specifically limited to allow the BWSO personnel to respond expeditiously.

Table 19. Complaint Resolution in Queens, January 2001-December 2008

	SA	SA1	Total	% of total	Code Defintion
RESOLUTION CODES & DESCRIPTIONS	77,607	1,137	78,744		
SSBU - SBU RESOLVED	26,144	235	26,379	33%	The main sewer was blocked requiring flushing.
SSINF - RESOLVED BY INSP/COURT. FLUSH	19,007	144	19,151	24.3%	The lateral was blocked. DEP flushed lateral as a courtesy.
SINSP - RESOLVED BY INSPECTION	18,817	393	19,210	24.4%	The lateral was blocked or condition no longer existed.
SDUP - DUPLICATE	9,785	224	10,009	12.7%	The condition was previously responded to.
SSTO - TEMP OVRTAXED SEWER-NO WRK REQ	1,914	28	1,942	2.5%	Temporary high flow that subsequently receded.
S616 - INSIDE CONDITION	684	1	685	0.9%	The problem was inside a building or home.
STEL - RESOLVED BY TELEPHONE CALL	626	9	635	0.8%	
S689 - OTHER - SEE REMARKS	341	31	372	0.5%	Information only available from individual Work Orders.
All Others	289	72	361	0.5%	Aggregattion of 25 other lesser used codes.

Data provided by DEP on 12/30/08
SA - denotes sewer backup complaint
SA1 - denotes overflowing manhole

Note that approximately 33 percent of the complaints were in fact due to a blockage in the main sewer for which DEP was responsible. Table 20 presents a similar

set of data representing the resolution of sewer complaints in Queens over a one-year period, 2006. The 2006 data demonstrate consistency in the respective percentages of complaints identified over the seven year period.

Table 20. Resolution of Sewer Backup Complaints for the Borough of Queens in the Period 1/01/2006-12/31/2006

Print Date: 12/30/2008

	Total	% of Total
Resolution Codes & Description	10,804	
SSBU - SBU RESOLVED (Sewer Flushing)	3,490	32.3%
SINSP - RESOLVED BY INSPECTION	2,870	26.6%
SSINF - RESOLVED BY INSP/COURT. FLUSH	2,539	23.5%
SDUP - DUPLICATE	1,517	14.0%
SSTO - TEMP OVRTAXED SEWER-NO WRK REQ	166	1.5%
STEL - RESOLVED BY TELEPHONE CALL	131	1.2%
S689 - OTHER - SEE REMARKS	37	0.3%
All Others	54	0.5%

Data provided by DEP on 12/30/08

Tables 20 and 21 demonstrate that roughly 33 percent of the sewer complaints were in fact found to be blockages in the NYCDEP sewer system. In each case a BWSO field crew was required to flush the sewer line to remove the blockage.

The sewer complaint resolution data were extrapolated to the other boroughs to estimate the number of blockages occurring throughout the entire city. The calculation was based on the prorated land area of each borough in comparison to the land area of Queens. Table 21 estimates that BWSO field crews responded to more than 200,000 sewer backup complaints and 70,000 sewer blockages over the seven-year period. Blockages of a sewer system can be prevented with effective cleaning and inspection programs. A significant number of blockages demonstrates a failure to properly operate

and maintain the sewer system.

Table 21. Estimated Sewer Backup Complaints for NYC in the Period 1/1/2001-12/31/2008

	Borough				
	% of NYC Land Area				
	Queens[1]	Brooklyn[2]	Manhatten[2]	Bronx[2]	Staten Island[2]
RESOLUTION CODES & DESCRIPTIONS	36.00%	23.30%	7.60%	13.90%	19.30%
Total, by Borough	78,744	50,965	16,624	30,404	42,216
SSBU - SBU RESOLVED	26,379	17,073	5,569	10,185	14,142
SSINF - RESOLVED BY INSP/COURT. FLUSH	19,151	12,395	4,043	7,394	10,267
SINSP - RESOLVED BY INSPECTION	19,210	12,433	4,055	7,417	10,299
SDUP - DUPLICATE	10,009	6,478	2,113	3,865	5,366
SSTO - TEMP OVRTAXED SEWER-NO WRK REQ	1,942	1,257	410	750	1,041
S616 - INSIDE CONDITION	685	443	145	264	367
STEL - RESOLVED BY TELEPHONE CALL	635	411	134	245	340
S689 - OTHER - SEE REMARKS	372	241	79	144	199
All Others	361	234	76	139	194
Extrapolated Total for NYC for January 2001 to December 2008		218,952			

[1] As reported by DEP.
[2] Calculation: ((Queens Data/Queens Land Area)*Other Borough Land Area)

B. Failure to Develop LTCP in Accordance with SPDES Permits, Administrative Consent Orders, and EPA's CSO Control Policy

This section of the investigation report reviews NYCDEP's Long Term Control Plan Project and the 11 individual Waterbody/Watershed Plans (PLANs) prepared under that project. The section is organized as follows:

1. Background
2. History of Facility Planning and CSO Abatement
    - 2.1 Timeline of CSO Abatement Failures
    - 2.2 Monetary Penalties
    - 2.3 Progression of CSO Abatement Facilities 1992–2005
3. Long Term Planning Approach
    - 3.1 Requirement to Complete LTCPs
    - 3.2 Summary of Waterbody/Watershed Report Format
    - 3.3 Waterbody Descriptions
    - 3.4 Waterbody/Watershed Plan or Long Term Control Plan?
4. Waterbody/Watershed Alternatives Analysis
    - 4.1 Marginal CSO Reduction Benefits of PLAN Selected Alternative
    - 4.2 Cost of Alternatives Chosen versus Alternatives Evaluated
    - 4.3 Failure to Select Appropriate Alternatives: Knee of the Curve Approach
        - i. Hutchinson Creek Case Study
        - ii. Flushing Bay Case Study
    - 4.4 Increased Wet Weather Treatment Not Evaluated
5. Review and Comment Regarding NYCDEP's LTCP Process
    - 5.1 Are Significant Water Quality Improvements Achieved?
    - 5.2 Failure to Meet Scheduled Requirements for Wet Weather Treatment Capacity
6. EPA-Developed LTCP Alternatives to the Waterbody/Watershed Plans

As part of the CSO Control Policy published in the *Federal Register* in 1994, EPA required permittees to prepare Long Term Control Plans (LTCPs) to address CSOs. Specifically,

> *Permittees should develop long-term control plans (LTCP's) for controlling CSO's. A permittee may use one of two approaches: 1) demonstrate that its plan is adequate to meet the water quality-based requirements of the CWA ("demonstration approach"), or 2) implement a minimum level of treatment (e.g.,*

> *primary clarification of at least 85 percent of collected sewage flows) that is presumed to meet water quality-based requirements of the CWA, unless data indicate otherwise ("presumption approach").*

EPA also published the *Combined Sewer Overflows—Guidance for Long-Term Control Plan (USEPA, 1995a),* which provides a comprehensive set of tools and guidelines to assist permittees responsible for preparing LTCPs. Its targeted audience was the municipalities that prepare the LTCPs.

1. Background

The challenges and complexities of the NYCDEP Municipal Combined Sewer System (CSS) exceed most systems in this country. NYCDEP has a long history of attempting to address CSOs and the associated degradation of the quality of waters of the United States. New York City is surrounded by water, and portions of the city's development encompass entire islands. Although the NYCDEP can point to a lengthy list of projects to address and remedy impacts of CSO discharges, those efforts appear to fall short of the level required to significantly reduce the volume of polluted discharges entering the surrounding waterbodies.

2. History of Facility Planning

2.1 Timeline of CSO Abatement Failures

In-depth facility planning was initiated when it became a requirement of NYSDEC through SPDES permits issued in the early 1980s. During that period NYCDEP began to break the planning process into separate areas, or watersheds, surrounding and encompassing the various waterbodies of the city. Those initial plans,

produced in the late 1980s and early 1990s, have not been reviewed as part of this investigation. Also during this time period, the City conducted its first comprehensive investigation of floatables in an NYCDEP-initiated City-Wide Floatables Study.[19] A Consent Order issued in 1992 (1992 Consent Order) established date-specific requirements for the design and construction of facilities conceived in previous planning efforts. In addition, the 1992 Consent Order required the initiation of a Floatables Containment Program.

Seven years later, a second encompassing Consent Order, referred to as the Omnibus Consent Order IV (OMNI IV Consent Order), was issued. It covered a host of violations from February 1992 to December, 1997, and initiated additional facility programs. Violations ranged from operation and maintenance issues to failure to report dry weather discharges. This order also imposed fines on NYCDEP for violations to a variety of SPDES permit requirements.

Another Consent Order, the 2005 Administrative Consent Order,[20] was issued on January 14, 2005. This order was also issued to address violations from previous orders, establish new dates for past-due facility designs or construction, and impose new requirements in an attempt to address the substantial volume of CSO discharges. The modification was, in part, a response to NYCDEP's 2003 Facility Plan, which had documented that performance dates had been missed or would be missed. In addition, the 2005 Consent Order established the process for developing and implementing the LTCPs as required by CSO Control Policy. The 2005 Consent Order established a citywide 2017

[19] Response to Comments on the 2004 Administrative Consent Order for Implementation of the Combined Sewer Overflow Abatement Program in New York City, January 14, 2005, final version, p. 1.
[20] Administrative Order on Consent, *In re City of New York and the New York Department of Environmental Protection*, DEC Case No. C02-20000107-8, effective January 14, 2005.

date for LTCP development. Again fines were issued for violations resulting from failure to meet the established schedules in the 1992 Consent Order.

Although progress was being made, NYCDEP continued to miss facility plan construction dates and continued to request time extensions to comply with the 2005 Consent Order. Because the 2005 Consent Order facility plan dates continued to be missed, NYSDEC responded by issuing another legal order to comply, by modifying the 2005 Consent Order. This order, labeled the 2007 Modified Consent Order, extends the dates of several facility projects, some of which had already been missed at the time the 2007 Consent Order was prepared. In addition, the 2007 Modified Consent Order relinquishes the requirement to meet specific dates for the preparation of some of the basin-specific LTCPs. Instead of requiring specific LTCP submittal dates, NYSDEC tied the LTCP requirement to the approval of Waterbody/Watershed Plans (PLANS). While both NYCDEP and NYSDEC state that the PLANS are a first step in the LTCP process, they appear to contain information found in a LTCP. The following section discusses this concept in further detail. Verification has not been acquired as to the number of PLANS that have been approved, although most were submitted in June 2007. The following is a list of Consent Orders and the associated monetary penalties (liabilities) imposed upon NYCDEP.

2.2 Monetary Penalties

- OMNIBUS IV Consent Order
  - $500,000 fine to NYSDEC
  - $1 million payment for Environmental Benefits Projects
- 2005 Consent Order
  - $2 million fine to NYSDEC

  - $1 million Memorandum of Understanding for Independent Environmental Monitors
  - $1.5 million payment for Environmental Benefits Projects
- 2007 Modification to 2005 Consent Order
  - $1 million fine to NYSDEC
  - $4 million payment for Environmental Benefits Projects

Additional minor Consent Orders have also been issued; two of them are listed below along with the Consent Orders described in this section. Table 22 presents the Consent Orders in tabular form to facilitate review.

Table 22 - Consent Orders Chronology

Consent Order Date	Violations
1992 Administrative Consent Order	1988 SPDES Permit Violations
1996 Modification to 1992 Order	Address Catch Basins & Floatables
OMNIBUS IV Consent Order (*circa 1999*)	Excessive Permit Violations & Delayed Facility Progress
2002 Nitrogen Control Consent Order	Address Eutrophication in Various Waterbodies
2005 Administrative Consent Order	Continuing Delays in Facility Progress & Initiation of Formal Long-Term Planning
2007 Modification to 1999 & 2005 Orders	Continuing Delays in Facility Progress & Missed Dates for Long-Term Planning

The length of time that has been required to address CSO discharges can be demonstrated with the following representative statement:

> *The Flushing Creek Facility Plan (URS 1989) recommends improvements to the sewer system that NYCDEP has committed to completing in the near future.*[21]

The referenced "plan" was primarily to construct a 28-MG CSO retention tank. Eighteen years (with repeated decrees and fines) after that URS 1989 plan, the tank has been

[21] *FLUSHING Waterbody/Watershed Plan, Section 7, p. 7-61.*

constructed; it was placed into service in May 2008. However, many of the CSO control projects envisioned in the late 1980s and encompassed in the 90s-era Facility Plans have fallen behind schedule and have yet to be constructed.

2.3 Progression of CSO Abatement Facilities 1992-2005

In 1992 NYCDEP began the process of constructing eight CSO storage tanks and several other CSO abatement projects. The total cost of the proposed work was approximately $1.4 billion (in 2004 dollars). In conjunction with the 2003 Facility Plan, the 2005 Consent Order increased the required number of projects to slightly more than 30 and the expenditure requirements to approximately $2.1 billion (in 2004 dollars). The 2005 Consent Order projects were added to address the continuing challenge of NYCDEP to meet some water quality standards. NYCDEP characterized the added projects as follows: "*When fully built-out, the program will cost the City considerably more than originally envisioned when the 1992 ACO was signed and will provide more benefits to the environment.*"[22] Upon review, the added projects provide a reduction in pollutant discharges of approximately 5 billion gallons.

NYCDEP acknowledged this marginal benefit in the Response to Comments document addressing the 2005 Consent Order. Using numbers provided in that document, NYCDEP proposed an $800 million increase in spending, resulting in a 16 percent increase in the capture of untreated CSOs (i.e., 32 billion gallons reduced to 27 billion gallons) as compared to the 1992 facility plans.

[22] Response to Comments on the 2004 Administrative Consent Order for Implementation of the Combined Sewer Overflow Abatement Program in New York City.

3. Long Term Control Planning Approach

3.1 Requirement to Complete LTCP's

The 2005 Consent Order, which by incorporation is part of the 13 individual SPDES permits, contains specific language requiring NYCDEP to prepare LTCPs. Each SPDES permit contains the following requirement:

> **IX LONG-TERM CONTROL PLAN**
>
> DEC and the Permittee have entered into an Administrative Order on Consent, *In re City of New York and the New York City Department of Environmental Protection*, DEC Case No. CO2-20000107-8, effective January 14, 2005, concerning the Permittee's Combined Sewer Overflow ("CSO") abatement program. In addition to the Monitoring Requirements for CSO Regional Facilities in Item VII and the CSO Best Management Practices set forth in Item VIII, the CSO Order on Consent, which is attached hereto, governs the Permittee's obligations with regard to its CSO abatement program which includes, but is not limited to, design and construction of CSO abatement facilities and the submission of Drainage Basin Specific and City-Wide CSO Long-Term Control Plans. Modifications to the CSO Order on Consent will be publicly noticed for review and comment in accordance with Uniform Procedures Regulations, 6 NYCRR Part 621.

However, unlike the process undertaken by other large metropolitan areas, the 2005 Consent Order requires NYCDEP to (1) prepare 18 Waterbody/Watershed Plans; (2) construct facilities (most of which have been predetermined through previous facility plans); (3) perform post-construction monitoring of the resulting water quality for a period of years; (4) ratify the Waterbody/Watershed Plans into individual LTCPs; (5) continue post-construction monitoring; and (6) combine the individual LTCPs into a single citywide LTCP. This process is scheduled to be completed over the next nine years, with the culmination of a citywide LTCP due in December 2017. It is unclear why a date of 2017 was chosen for completion of an LTCP for NYCDEP. NYSDEC explicitly

states in its 2005 Consent Order (under Article 26) that

> *Since December of 2000, Respondents are in violation of Section 402(q)(1) of the CWA and ECL Section 17-0807(4), for failure to have an approved LTCP consistent with the CSO Control Policy.*

It is also unclear why some of the Waterbody/Watershed Plans prepared by NYCDEP and submitted to NYSDEC have not been approved because NYSDEC requires NYCDEP to submit LTCPs within 6 months of approval of the Waterbody/Watershed Plans. *Nonetheless, this submittal and approval process is critical to EPA's interest because the interim period before approval allows for EPA to review, interject, and possibly affect the selection of CSO control alternatives and the schedule for their implementation.* It will undoubtedly be more difficult for EPA to actively participate in the process once the remaining individual Waterbody/Watershed Plans have been approved.

The language of the 2005 Consent Order states that individual LTCPs must be prepared for each of the 18 watersheds. Of those 18 watersheds, some basins, such as Newtown Creek and Gowanus Canal, are contained wholly within the city and some basins, such as the Bronx River and Hutchinson River, extend outside the city limits. Some areas do not lie within any well-defined basin, particularly the areas of Staten Island and Manhattan. These ill-defined basins are analyzed under the encompassing East River and Open Waters umbrella. The East River and Open Waters waterbodies are contiguous with waterbodies that extend beyond New York City. Some of the 18 watersheds are completely contained within one of the 14 WPCPs' coverage areas operated within the 5 boroughs of New York City, whereas others extend into two or

more WPCP coverage areas.

New York City has chosen a combination of basins (aka watersheds or waterbodies) so that currently 10 separate Waterbody/Watershed Plans, along with one completed LTCP, have been submitted. There does not appear to be any combination where a single watershed and a single WPCP overlie one another. In addition, no language in the SPDES permits nor any consent order language supports the conclusion that 10 reports instead of 18 (number of watersheds) or 14 (number of WPCPs) PLANS should be prepared. In essence, the name alone, *waterbody/watershed*, represents a dichotomous mix of concepts and physical attributes. For example, the same planning process was applied to both the Gowanus Canal "watershed" and the East River and Open Waters "waterbody." Gowanus Canal's 1,750-acre tributary area is contained within the city limits, while the combined land and water area of nearly 200,000 acres of the East River and Open Waters has no traditional tributary watershed. Table 23 presents a matrix of the 11 Waterbody/Watershed Plans and the associated 14 WPCPs.

Table 23. Matrix of the 11 Waterbody/Watershed Plans and Associated 14 WPCPs

LTCP Plan	Jamaica Bay & Tribs*	Alley Creek & Little Neck Bay	Bronx River	Coney Island	East River and Open Waters	Flushing Bay & River	Gowanus Canal	Hutchin-son Creek	New-town Creek	Paer-degat Basin	West-chester Creek
WPCP	Jamaica 26th Ward Rock-away Coney Island	Tall-man Island	Hunts Point	Owls Head	Newtown Creek Port Richmond Oakwood Beach* Owls Head Red Hook North River Wards Island Hunts Point Bowery Bay Tallman Island	Tallman Island Bowery Bay	Red Hook Owls Head	Hunts Pt	Bowery Bay New-town Creek	Coney Island	Hunts Point

*Jamaica Bay Tributaries include several of the 18 tribuataries identified as separate watersheds

It is important to note that the stated intention of this combination of PLANS is to evaluate alternatives that will meet water quality standards; however, the Consent Order's wording requires NYCDEP to adopt existing facilities plans for most of the 11 basins, and seems to limited alternative selection to minor modifications. The specific language is as follows:

> *Subject to the Departments [DEC] approval, The Waterbody/Watershed Facility Plans may refine, and or propose, minor modifications to the existing approved and/or pending CSO Facility Plans.*

The language goes on to suggest that NYCDEP examine additional control measures designed to control CSOs. *A review of the 11 Waterbody/Watershed Plans indicates that although an array of extensive control measures were evaluated, additional significant CSO volume controls were rejected.* Facility improvements for full CSO control that

range up to $60 billion were evaluated, yet previously established plans (and in some cases completed construction projects) with modest additions totaling approximately $3 billion were ultimately selected (see Attachment 5).

3.2 Summary of Waterbody/Watershed Report Format

As described earlier, NYCDEP, operating under the NYSDEC-generated 2005 Consent Order (also referred to as an Administrative Consent Decree and 2005 CSO Consent Order), has been legally ordered to comply with EPA's CSO Control Policy. Specifically, NYCDEP must prepare LTCPs to address the ongoing discharge of untreated CSOs from its CSS in order to meet water quality standards. The 2005 Consent Order set a deadline for submittal of an approvable Waterbody/Watershed Plan for each of the 18 identified watersheds in and around New York City. As listed in the 2005 Consent Order schedule, this Waterbody/Watershed Plan document precludes the actual LTCP.

Following the 2005 Consent Order, NYCDEP began the process to develop these PLANs. NYCDEP grouped various watersheds and waterbodies into a set of 11 independent reports. They have titled the individual plans *City-Wide Long Term CSO Control Planning Project, [insert name] Creek Waterbody/Watershed Facility Plan Report.* One of the 11 plans, the plan for Paerdegat Basin, has been converted into a specifically titled Long-Term Control Plan. It is not clear why that plan bears the LTCP title because it is similar in format to the other 10 plans. All 11 plans were acquired for review.[23] Each plan has a date on the cover, and some of the plans are labeled "draft."

[23] The 10 Waterbody/Watershed Plans and 1 LTCP were downloaded from the Web site http://www.hydroqual.com/Projects/ltcp/verify.asp

Although the required submission date was June 2007, several of the plans are dated past that date; one is dated as late as September 2008 (Coney Island Creek). Each plan includes an Executive Summary, 11 body sections, and several appendixes. A sample table of contents and a brief summary of plan sections are attached as Attachment 3 of this report.

3.3 Waterbody Descriptions

NYCDEP has several distinct waterbody types, each with unique characteristics and challenges. The small confined canals and creeks within the city, for example, are highly impacted when they act as CSO discharge points. This is reflected in the fact that most are impaired and few currently meet the existing NYSDEC water quality standards. Another type is represented by rivers like Hutchinson River, which flow onto the boundaries of the city from upstream basins. In the latter instance, NYCDEP appears to forestall opportunity for improving overall water quality, opting instead to concentrate on one aspect, floatables control. Doing so defers water quality to future action that relies on an assumption that cooperation with other government entities will occur.

> *In addition to the proposed components, the NYCDEP proposes a cooperative* [sic] *water quality monitoring program with Westchester County to improve the water quality and overall health of the river.*
>
> *The NYCDEP has already begun a dialogue with Westchester County to initiate interjurisdictional coordination.*[24]

A unique waterbody is the relatively confined Jamaica Bay (Bay). While the tributaries to the Bay are similar in nature to other small waterways in the city, the Bay

[24] *Hutchinson Waterbody/Watershed Plan, Section 7, p. 7-54.*

itself is more similar to the open waters, the difference being its relatively confined nature. Because of the unique characteristics of Jamaica Bay, the density of sensitive areas, and the contribution from numerous surrounding land areas, the Bay seems to receive a higher-than-normal level of attention. This holds true in addressing CSOs tributary to the Bay, as evident by the single published and labeled LTCP for Paerdegat Basin (November 2005, revised June 2006). In addition to past and ongoing 2005 Consent Order projects, the Bay PLAN chooses alternatives that approach a thorough effort to reduce polluting CSOs. That being said, the Bay PLAN stops short of adding the necessary controls much beyond the pre-mandated facility plans in order to meet some water quality standards.

The final group of waterbody types is the "open waters," which include the East River and New York City portion of the Hudson River. This group, combined into a single PLAN, embodies the greatest diversity of waterways. That presents both a significant challenge and a prospect. The challenge is the large percentage of CSO outfalls and the sheer volume of CSO discharges that enter the waterbody. The prospect is the fact that

> *[w]ater quality in the open water areas of New York Harbor has improved over the last several decades to the point where attainment of existing numerical criteria is expected to be achieved at all times and all locations in the open waters under typical precipitation conditions (i.e., the 1988 rainfall measured at JFK) and without additional CSO controls.*

In other words, any action, or lack thereof, results in attained standards. NYCDEP goes on to say:

> *…the Inner Harbor and Outer Harbor CSO facility plans accurately characterized the open water areas of New York Harbor as being largely uninfluenced by CSO discharges. (East River and Open Waters Water Body Plan)*

In fact, NYCDEP has used this prospect as an opportunity to potentially divert CSOs from confined tributaries (e.g., Gowanus Canal) to the open water. In one case, combined overflows are diverted from one watershed to another with a resulting increase in pathogens at a sensitive area.[25] NYCDEP makes the argument that regardless of this diversion, the pathogen level remains below numeric standards.

3.4 Waterbody/Watershed Plan or Long-Term Control Plan?

The LTCP is meant as a product to guide a permittee toward a feasible, economic, and practical plan that will direct both the development of new facilities and the operation of existing ones. Its primary goal is the reduction of CSOs and improvement of water quality. NYCDEP has been involved in a process that, when compared with the guidance for preparing a LTCP, meets many of its stated requirements. For example, any municipal wastewater authority, whether large or small, cannot operate in a vacuum without the public's involvement. This is especially true when large-scale projects are involved and readily apparent failures (e.g., sewage in waterways) are highlighted. With this realization, NYCDEP has involved individual citizens, advisory groups, and stakeholders in its facility plan development. In addition, the Department operates under an NPDES (SPDES) permit and currently under a legal order that includes a public participation requirement. Therefore, when NYCDEP was ordered to develop the PLANS, they could

[25] East River and Open Waters Waterbody/Watershed Plan, Section 7, Part 7.2.1, 1st paragraph, pp. 7-8 and 7-9.

easily point to previous activities, such as public presentations, as meeting one of the nine tenets of the LTCP process.

It appears that the PLANS, while not specifically titled LTCPs, are indeed the product that will be repackaged and submitted as the LTCPs. There is substantial evidence of this, and language in the PLANS can be interpreted to imply that these are essentially the LTCPs. For Example:

> *The Waterbody/Watershed Facility Plan for Alley Creek and Little Neck Bay has been developed in accordance with the LTCP requirements.*[26]
>
> *This Waterbody/Watershed Facility Plan addresses each of the nine elements of long-term CSO control as defined by federal policy and shown in Table 8-2.*[27]
>
> *All 18 WB/WS plans, including those for the East River and Open Waters, contain all the elements required by the USEPA for a Long-Term CSO Control Plan.*[28]
>
> *After the NYSDEC submits its comments to the NYCDEP regarding this WB/WS Facility Plan, there will be a public meeting. An additional public meeting will be held at the ratification of the WB/WS Facility Plan into a LTCP, at which point it will become enforceable legislation.*[29]

4. Waterbody/Watershed Alternatives Analysis

The NYCDEP and other city offices continue to state that the goal of the LTCP Project is to improve water quality, reduce CSOs, and achieve the fishable and swimmable goals of the Clean Water Act. Following a careful analysis of the alternatives presented, it is apparent that NYCDEP has chosen the path of least resistance and least

[26] *Alley Creek and Little Neck Bay Waterbody/Watershed Plan , Section 8, pg 8-1*
[27] *Alley Creek and Little Neck Bay Waterbody/Watershed Plan Section 8*
[28] *Open Waters and East River Waterbody/Watershed Plan, Executive Summary, pg ES-.1*
[29] *Hutchinson River Waterbody/Watershed Plan, Section 6, pg 6-8*

cost, often stating the relative difficulty of a project (e.g., sewer separation) or the lack of appropriate sites (e.g., storage tank construction) rather than choosing a path that meets its goal of reducing CSOs and improving water quality. While NYDEP did not prepare a summary or attempt to prepare a consistent combination of the PLANS components, the individual PLAN alternatives and costs were summarized and are attached (Attachment 5) to this report. The summaries were prepared in a consistent format and can be compared between watersheds. Because the PLANS were not prepared in the same manner, some data are missing or had to be interpolated from other information presented. The values in the summary tables were taken directly from the PLANS or were inferred from the PLANS text. Because of the complexity of the information and the inconsistent manner in which it was presented, not all of the values may be confirmed with values presented elsewhere, in either the PLANS or other documents. For example, the total baseline CSO volume value from the summary of alternatives is 28.1 billion gallons of CSOs annually (Table 24), whereas other NYCDEP documents commonly refer to a value of 32 billion gallons as a baseline figure.

4.1 Marginal CSO Reduction Benefits of PLAN Selected Alternative

Table 24 is a comparison of CSO discharge totals with specific watershed breakdowns. It includes an analysis of the marginal benefit resulting from the Watershed/Waterbody alternatives analysis process. The marginal benefit within each PLAN, strictly in terms of CSO volume reductions, ranges from zero to 33 percent, with a cumulative citywide benefit of 6 percent marginal reduction over the facility plans conceived in the 2005 Consent Order. The 6 percent value does not include a potential

increase in CSO volume (and associated reduction in benefit) should CSOs from tributaries be diverted to the East River or other open waters.

Table 24. Comparison of Baseline (1988) CSOs vs. Waterbody/Watershed Benefit

Facility (Watershed) Plan	Baseline CSO Volume (MGY)	Volume following Facility Plan	Volume following WB/WS Chosen Alternative	Reduction as result of WB/WS	Marginal Benefit of WB/WS as % of Baseline
Jamaica	613	255	255	0	0%
Alley	517	273	256	17	3%
Bronx	947	947	947	0	0%
Coney	292	38	38	0	0%
East	16102	12369	12269	100	1%
Flushing	3964	2351	1344	1007	25%
Gowanus	377	250	250	0	0%
Hutchinson	390	390	390	0	0%
Newtown	1463.5	1070	581	489	33%
Paerdegat	2750	1046	1046	0	0%
Westchester	670	670	540	130	19%
Totals	28085.5	19659	17916	1743	6%

MGY - Million Gallons per year

4.2 Cost of Alternatives Chosen vs. Alternatives Evaluated

When the PLANS alternatives analysis process began in 2005, NYCDEP had a standing commitment to spending $2.1 billion on approximately 30 projects. A review of the post-2005 PLANS alternative analysis shows that projects cumulatively totaling nearly $60 billion were considered. Most were storage tunnels or sewer separation efforts. For example, the cost of 100 percent capture of CSOs for the East River and Open Waters Waterbody/Watershed Plan was $44.5 billion. In context, that alternative would have captured more than 16 billion gallons of CSOs, or more than 50 percent of the citywide total.

An attempt was made to compare the costs presented in NYCDEP CSO Program Cost (see Table 1 in the Response to Comments, January 14, 2005, final version,

Attachment 4) with those presented in the PLANs. Because NYCDEP's costs are WPCP-specific and PLAN costs are watershed-specific, a direct comparison proved impossible. However, to make a relative comparison, the costs for the PLANS' selected alternatives was totaled; it equals $3.1 billion. This represents an increase in spending of $1.0 billion over the standing commitment to spend $2.1 billion. For the purposes of this report, the individual alternatives from each of the 11 PLANs have been gathered and placed in a series of tables. The tables identify NYCDEP's chosen alternatives. These tables are provided as Attachment 3.

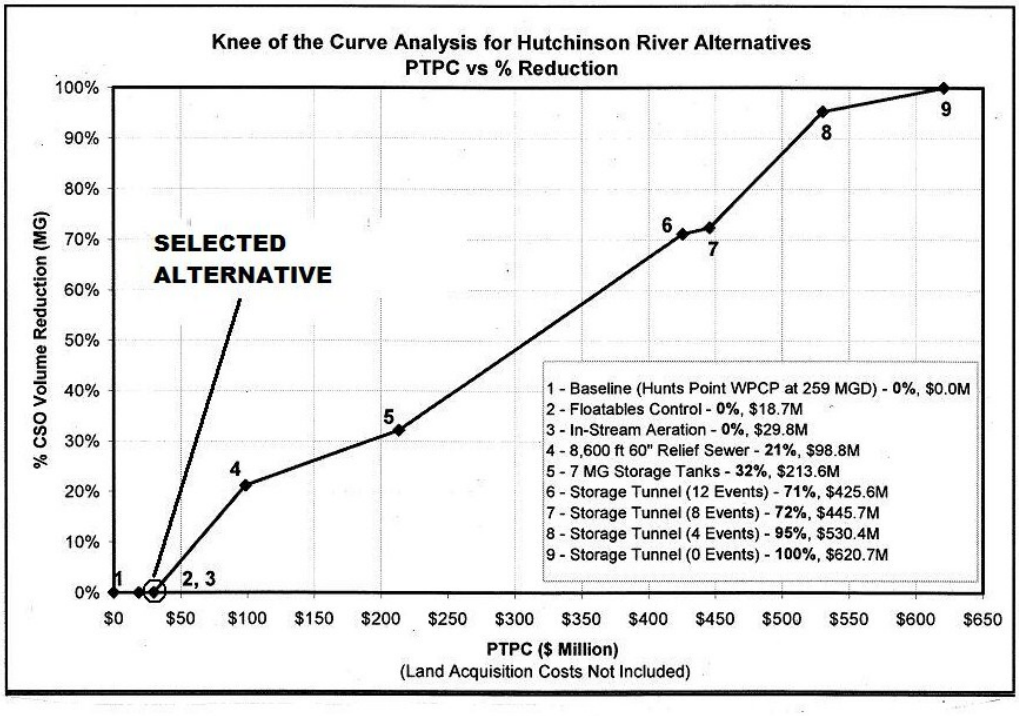
4.3 Failure to Select Appropriate Alternatives: Knee of the Curve Approach

With a stated goal of reducing CSOs and the resulting degradation of water quality, one effective tool is the "knee of the curve" analysis. This analysis uses a graph of costs versus benefits. The optimum alternative is the one for which the marginal costs outweigh the marginal benefits (knee of the curve). The following are several case studies of alternative analyses provided in the PLANs.

Hutchinson Creek Case Study

Hutchinson Creek is an example of the argument that NYCDEP has chosen the path of least cost and effort. Figure 3, taken directly from one of NYCDEP's PLANs, shows an example cost verses benefits curve.

Figure 3. Hutchinson River Knee of the Curve Analysis



Here, the selected alternative—floatables control and in-stream aeration—provides no reduction in CSO volumes, spends just 8 percent of the full capture cost, and appears to ignore the knee of the curve approach. In addition, according to the PLAN, Hutchinson River is not in attainment with most water quality standards, nor will it be, following PLAN implementation. Information presented in the PLAN[30] shows a drop of 43 percent in the minimum Dissolved Oxygen concentration during wet weather. Fecal Coliform values increase 17 fold, averaged over the sampling stations, during wet weather. The PLAN clarifies that while New York City CSOs contribute to these water quality values, a majority of the pollution is contributed by Westchester County, upstream of the city.

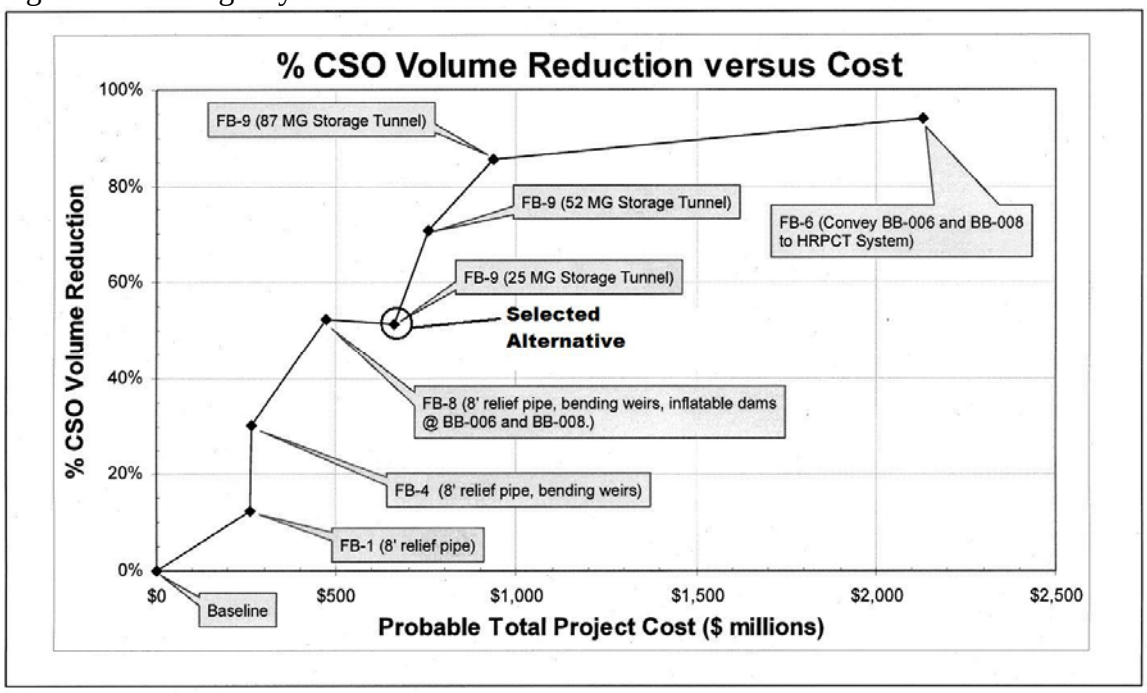
Flushing Bay Case Study

The Flushing Bay example is different from the Hutchinson Creek example in that

[30] Hutchinson River Waterbody/Watershed Plan, Section 4, table 4-6 & Table 4-8, (pg 4-31 & 4-35)

the selected alternative provides some level of CSO reduction. However, the knee of the curve approach is again disregarded. A review of the graph shows that a small increase in expenditure (over selected alternative) could result in a significant increase in benefit. The true "knee" in this example lies at FB-9 (87-MG Storage Tank) and not at FB-9 (24-MG Storage Tank). Figure 4 was taken directly from the Flushing Bay and Flushing Creek Waterbody/Watershed Plan.

Figure 4. Flushing Bay Alternatives: CSO Reduction Versus Cost



A second curve presented in the PLAN shows project cost verses water quality improvements. That curve mirrors the curve in Figure 4 in that an increase in storage from 25 to 87 MG provides a similar improvement in water quality.

4.4 Increase in Wet Weather Treatment Not Evaluated

One alternative not evaluated in any of the 18 basins or at any of the 14 WPCPs is the increase in wet weather treatment beyond the "two times design dry weather

treatment plant capacity" (2xDDWF). Additional treatment beyond the obligation to provide 2xDDWFs, in combination with an increase in conveyance, storage, and other measures, could have a substantial impact on CSO volumes. Because costs or CSO reductions were not quantified for this option, an evaluation of its relative effectiveness cannot be performed.

5. Review and Comment Regarding NYCDEP's LTCP Process

NYCDEP has a long history of attempting to address the problem of CSO discharges and associated degradation of waterbodies within its jurisdiction. Unfortunately, a review of that history leads to the observation that the process has been fraught with inefficiencies in the planning, design, and construction of facilities, resulting in delays, fines, and legal mandates. Even the most recent comprehensive effort of preparing the Waterbody/Watershed Plans seems to demonstrate this pattern. Although NYCDEP can point to a seemingly endless attempt to define and address the complex aspects of its wastewater collection, conveyance, and treatment systems, the Department cannot make the claim that the waterbodies it is charged to protect meet the highest and best standards possible.

5.1 Are Significant Water Quality Improvements Achieved?

The stated goal of EPA through its enforcement of the CWA and that act's various provisions is first to protect, and subsequently to improve, the quality of the waters of the United States. To this end, EPA has developed a comprehensive set of policies. In particular, EPA has developed the 1994 Combined Sewer Control Policy. It is unclear whether NYCDEP intends to provide only marginal improvements in water

quality in an attempt to meet existing water quality standards or whether there is a genuine attempt to improve the water quality by attaining upgraded standards. In reading the various plans, reports, and documents published by NYCDEP, one could draw the conclusion that a concerted effort is being made to significantly improve water quality. It appears however, that the PLANS and chosen alternatives will not even meet the existing standards and, in anticipation of this, NYCDEP has laid the groundwork for reassessing and downgrading the standards.

Improve Water Quality . . .

> *The development of CSO abatement alternative plans were* [sic.] *intended to provide improvements in water quality beyond that developed from the 1989 Flushing Bay CSO Facility Plan (URS, 1989) that was approved by DEC prior to the development of the EPA CSO Policy*[31]
>
> *….its goal to improve the quality of the city's open waters and tributaries by developing a long-term plan to invest in infrastructure that will reduce the number of CSO events, and to reduce the volume of those events that do occur…*[32]
>
> *The LTCP to be developed subsequent to this Waterbody/Watershed Facility Plan will support a possible upgrade of water-quality standards to support secondary-contact recreation, thus supporting the Clean Water Act goals of fishable and swimmable water quality.*[33]

…or Achieve Marginal Gain and Re-assessment?

> *This Waterbody/Watershed Facility Plan also assesses additional, cost-effective CSO control alternatives or strategies (i.e., water quality standards revisions) that can be employed to provide attainment with the water-quality standards.*[34]
>
> *Although this WB/WS Facility Plan is expected to result in significant improvements to the water quality in Westchester Creek, it is not*

[31] Flushing Section 7, p. 7-34.
[32] Alley Section 6.5.1, pp. 6-7 to 6-8.
[33] Gowanus, Executive Summary, p. ES-1.
[34] Gowanus, Executive Summary, p.. ES-1.

> *expected to fully attain the applicable water quality criterion for dissolved oxygen in a typical year.*[35]
>
> *In Westchester Creek, a variance would be needed for the following pollutants: oxygen demanding substances (BOD for dissolved oxygen attainability in Westchester Creek), and effluent constituents covered by narrative water quality standards (suspended, colloidal and settleable solids; oil and floating substances).*[36]

5.2 Failure to Meet Scheduled Requirements for Wet Weather Treatment Capacity

Although NYCDEP continues to state that it meets the requirements of the SPDES permits and conjoining 2005 Consent Order for 2xDDWF, a data review indicates that this is not the case. In fact, the effort to achieve this permit requirement distracts from the LTCP process of analyzing additional technology based alternatives that improve water quality and go beyond permit compliance. This statement, for example, is made in one of the PLANs:

> *The NYCDEP's WPCPs are designed to accept their respective 2×DDWF for primary treatment during wet weather events. As such, NYC already controls a significant portion of combined sewage through the use of this technology.*[37]

The importance of the concept of 2XDDWF's treatment capacity cannot be understated. It is the foundation of the CSO abatement program for New York City and should be the start point for LTCP plan alternatives analysis. Treatment capacity, along with CSO storage, provides the basis upon which all other improvements build. For example, regulator modifications, pump station and force main upgrades, and system conveyance increases do little to protect water quality if the receiving plant cannot handle

[35] Westchester Creek Waterbody/Watershed Plan, Section 8, p. 8-2.
[36] Westchester Creek Waterbody/Watershed Plan, Section 9, p. 9-12.
[37] Flushing Bay and Flushing Creek Waterbody/Watershed Plan, Section 7, p. 7-20.

the increased flow. In recognition of this fact, NYSDEC has mandated that NYCDEP meet the 2xDDWF criteria. However, NYCDEP has failed to meet this objective as evident by the PLANS:

> *Operating data indicate that the Bowery Bay WPCP has only been able to process about 265 MGD during wet weather, short of the 300 MGD (2xDDWF) required by the SPDES permit.*[38]

> *Historically, Tallman Island WPCP has treated sustained wet weather flows averaging between 110 and 120 mgd, rather than the required 160 mgd (HydroQual, 2004).*[39]

6. EPA-Developed LTCP Alternatives to the Waterbody/Watershed Plans

Using the alternatives analysis and resulting facility projects from the PLANs, EPA developed a modified conceptual selection of alternatives. This EPA-Developed LTCP (EPA-LTCP) represents a higher level of CSO abatement, and should improve the level of water quality over the NYCDEP PLANs. Modeling analyses were not performed, nor were any comprehensive evaluations done based on developed selection of alternative. The purpose of this exercise is to demonstrate a conceptual alternative that is in line with guidance documents that analyze the potential financial capabilities of New York City

As further discussed in Section 5.c, Anticipated Defenses, CSO Expenditures Are Prudent and Reasonable, EPA contracted the services of Industrial Economics, Inc. (IE, Inc) to perform a financial capability analysis consistent with *EPA's Combined Sewer Overflows—Guidance for Financial Capability Assessment and Schedule Development*, February 1997, EPA-832-B-97-004. Based on a preliminary financial analysis provided

[38] Flushing Section 7, p. 7-37.
[39] Flushing Section 7, p. 7-60.

by IE, Inc the City's current residential burden (i.e., assuming $0 LTCP capital costs), measured as Cost per Household, was 1.19 percent of Median Household Income. IEC also concluded that New York City could spend up to approximately $19 billion on future CSO controls without the Cost per Household exceeding 2.0 percent Median Household Income. More modest expenditures of $7.5 billion and $13.5 billion would raise the Cost per Household to 1.5 percent and 1.75 percent Median Household Income. This indicates that NYCDEP possesses the financial capability to address the City's longstanding CSO problem in a manner more effective than what they propose in the PLANs.

NYCDEP presents an extensive array of alternatives across the 10 PLANs and 1 LTCP (Paerdegat Basin). EPA used that array of alternatives to produce a conceptual table of EPA-selected alternatives. The alternatives grouped in Table 25 represent one possible EPA-LTCP, referenced above. Because of the complexity of the watershed breakdown vs. WPCP coverage area, along with the inconsistent formats in which the alternatives costs and associated reductions were presented, EPA makes no representation that the summary in Table 6 portrays a viable or constructible plan. The exercise was conducted to demonstrate that options beyond the 2005 Consent Order-mandated and Waterbody/Watershed-sanctioned facilities are economically achievable.

In developing the conceptual EPA-LTCP, most of the PLAN alternatives were included, some additional (previously not selected) alternatives were included, and some PLAN alternatives were excluded. The primary decision in selecting alternatives was the cost vs. benefit. Knee of the curve plots were used to assist with the alternative selections, just as these same curves were presented earlier as evidence that NYCDEP had not selected the "knee" level of expenditure.

The total cost of this summary exercise was analyzed using EPA financial guidance methodologies similar to those in the analysis in Section 5.c. Based on this comparison of summary costs with information available, EPA determined that the total EPA-LTCP summary cost represents a Cost per Household of 1.53 percent of Median Household Income.

Table 25. Conceptual EPA-LTCP				
Watershed or WPCP	**Cost (millions - 2005)**	**CSO Volume Reduction (MG)**	**Planned (P) or Added (A)***	**Cost Per Gallon**
East - Faciity Plan (Upgrades to WPCP's)	$ 340	2405	P	$ 0.14
East - Add'l Wards Island WPCP Improvements	$ 44	1328	A	$ 0.03
Paerdegat - CSO Facility Plan (FP - 50 MG Storage)	$ 318	1705	P	$ 0.19
Paerdegat - FP + Add'l 20 MG Tank (70 MG)	$ 490	968	A	$ 0.51
Newtown - WQIP**	$ 180	91	P	$ 1.98
Newtown - 132.5 MG Tunnel	$ 2,243	1448.1	A	$ 1.55
Gowanus - CSO Facility Plan + Dredging, Skimming	$ 257	127	P	$ 2.02
Alley - CSO Facility Plan + BW @ Chamber 6	$ 30	261	P	$ 0.11
Alley - 30 MG Storage tank	$ 500	256	A	$ 1.95
Jamaica - Facility Plans w/o Plant Upgrade	$ 14	1057	P	$ 0.01
Ward Is (Jamaica Bay PLAN) - 24MG Tunnel	$ 776	586	A	$ 1.32
Flushing Bay - FB-9 (Tunnel 3)	$ 933	1733	A	$ 0.54
Flushing Creek - FC-2 (Facility Plan + Convey & Dredge)	$ 359	1634	P	$ 0.22
Coney - Ave V and Force Main	$ 177	254	P	$ 0.70
Westchester - Storage Tunnel (107 MG)	$ 895	660	A	$ 1.36
Bronx - Real Time Controls of Dams & Weirs (C4)	$ 63	530.32	A	$ 0.12
Hutchinson - Storage Tunnel (28.6 MG)	$ 530	371	A	$ 1.43
Plan Totals	$ 8,149	15414.42		$ 0.53

*Planned were chosen in WB/WS and Added were not previously chosen
** This and similar alternatives provide minimal CSO reduction but address other issues like floatables or odors

C. Additional Areas of Concern

Several additional areas of concern are currently under development.

1. Waterbody/Watershed Plans

Each Waterbody/Watershed Plan is essentially an individual LTCP, and therefore each merits intensive review. Specific areas of review that were not completed as a component of this investigation include:

- Selected design storm
- Sensitive areas analysis
- In-depth analysis of alternatives identification, costs, and selection

It appears that NYCDEP used one set of representative storms for all the Waterbody/Watershed Plans, and therefore the analysis may need to be performed only once. The sensitive areas analysis and in-depth analysis of alternatives identification, cost, and selection would need to be performed for all 11 PLANs.

2. Current and Anticipated Compliance with Water Quality Standards and Designated Uses

NYCDEP makes numerous claims regarding baseline water quality conditions, standards, and current and future attainment of water quality standards and designated uses. Many of these claims rely on hydraulic and/or water quality models to predict current and future impacts of CSOs and other nonpoint source discharges. Model adequacy, inputs, calibration, verification, and interpretation should be assessed in order to evaluate NYCDEP's claims. Receiving water sampling and data interpretation should also be reviewed.

3. Attainment of 2XDDWF and Further Expansion of Treatment Capabilities beyond 2XDDWF

Based on available documentation, NYCDEP has not attained the 2XDDWF requirement for its WPCPs. This might be the reason the Department has excluded additional treatment plant capacity from the ongoing alternatives analyses. At a minimum, the rationale for the exclusion should be determined; ideally, additional treatment capacity should be considered in the alternative analyses.

4. Presence of Sanitary Sewer Overflows and Possible Failure to Report

NYCDEP's non-compliance database is nearly void of the common sanitary sewer overflows (SSOs, e.g., overflowing manholes, sewer blockages, sewer breaks/defects) that are often present in other municipalities and aging sewer systems. For example, although 2,646 "Manhole Overflow" customer complaints were received from 2001 to 2008, NYCDEP's non-compliance database contains only a few related entries. The rationale for the lack of common SSOs is unclear, and it was not determined whether (1) these types of common SSOs are not prevalent in NYC, (2) these types of SSOs do not result in discharges to waters of the United States, or (3) NYCDEP fails to recognize and report such overflows. At the time of this report writing, NYCDEP had failed to provide the requested Customer Service Requests and associated Work Order for the Borough of Queens for 2006. Upon receipt, the paper-based documents will be reviewed and compared with the records contained in the non-compliance database in an effort to ascertain the reliability of NYCDEP's reporting procedures.

5. Occurrence of and Response to Basement Backups

NYCDEP did not provide discernible data regarding the occurrence of basement

backups. This lack of information was due to (1) a lack of a descriptive sewer backup resolution code and (2) the fact that all basement backup claims are handled entirely by the New York City Comptroller's office. NYCDEP has failed to provide data from the Comptroller's office regarding the number of basement backup claims filed and paid from 2001 to 2008.

6. Potential Human Health Effects and Other Impacts on Receiving Waters

18 public and private beaches were identified within New York City. The beaches are permitted by the NYC Department of Health and Mental Hygiene (NYCDOHMH). The NYC Department of Parks and Recreation operates six public bathing facilities and there are 12 private permitted bathing facilities. The swim season within New York City approximately 150 days long each year lasting from May through September.

As reported in the 2006 and 2007 BMP Annual Reports, NYCDOHMH is responsible for beach monitoring and the posting of public advisories. Three classifications are used to designate beach conditions and notify the public. These classifications include:

1. Class A: Open for Bathing
2. Class B: Under Advisory – Not Recommended for Bathing
3. Class C: Closed – Temporary Restricted for Bathing.

Class B and C conditions are described as follows[40]:

Class B: Under Advisory – Not Recommended for Bathing. NYCDOHMH "issues an

[40] Appendix 10, 2007 BMP Annual Report, pg. 179.

advisory to warn the public against water contact recreation when conditions may contribute to possible illness." A Pollution Advisory is issued and "the beach is classified as "Not Recommended for Bathing" when a sanitary and safety survey or investigation reveals the presence of minor amounts of floatable debris, medical/infectious waste, toxic contaminants, petroleum products and/or contamination on the beach or evidence of sewage and wastewater discharge." A Wet Weather Advisory is a preemptive standard based on a "level of precipitation that, when exceeded, can lead to elevated levels of pathogens due to CSOs and storm water runoff, and pose a public health threat. Consequently in an effort to ensure the safety of the public, affected permitted City beaches are advised to close their beach operation during heavy rainfall exceeding prescribed standards, and the public is recommended not to swim in these affected waters. The NYCDOHMH advises against bathing *in any area identified by the Department as being directly impacted* by CSO and storm water runoff."

Beach Closures occur when NYCDOHMH determines the beach is no longer safe for bathing due to any one of the following conditions: (1) water quality standards exceedance, (2) epidemiological data, (3) results of a sanitary and safety survey/investigation or (4) any other factor determined to be a public health or safety hazard.

Table 26 provides a summary of public beach postings for Wet Weather Advisories, Pollution Advisories, and Beach Closures for the 2004 through 2007 swim seasons.

Table 26. Public Beach Advisory and Closure Comparison

Posting (days)	2004	2005	2006	2007	Total
Wet Weather Advisory	295	168	265	301	1029
Pollution Advisory	69	70	68	26	233
Closure	88	38	54	50	230
Total	452	276	387	377	1492

The data indicates that the number of advisories and closures was relatively constant over the period of record. The average number of days of beach closure over the period was 57.5 days per year. Wet Weather advisories are a result of precipitation and are therefore not directly correlated to conditions within the receiving waters. However, pollution advisories and closures are indicative of the impacts from CSOs and storm water runoff. Table 27 provides the number of advisories and closures for each of the 18 beaches. Appendix 10 in both the 2006 and 2007 BMP Annual reports provided a complete discussion of NYCDEP's Beach Sampling and Beach Closure Procedures.

Table 27. Public Beach Advisory and Closure Comparison

	Wet Weather Advisory (days)				Pollution Advisory (days)				Closure (days)			
Beaches	2004	2005	2006	2007	2004	2005	2006	2007	2004	2005	2006	2007
American Turner	28	18	31	34	3	1	4	0	14	0	2	0
Danish American	30	18	22	34	3	1	12	0	11	0	3	0
Manhem	27	18	31	34	9	0	4	0	14	0	2	0
White Cross	35	18	26	26	10	0	8	0	0	0	3	0
Morris Yacht	34	18	30	33	3	2	7	0	0	0	2	0
Schuyler Hill	34	18	27	34	3	0	8	0	0	0	2	0
Trinity Danish	34	18	26	34	3	0	3	0	0	0	8	0
Orchard Beach	0	0	0	0	4	0	3	0	0	0	2	0
Douglaston Manor	26	12	25	10	0	19	9	23	27	0	11	50
Breezy Pont Reid	0	0	0	0	0	0	0	0	0	0	0	0
Rockaway	0	0	0	0	0	0	0	0	0	0	0	0
Coney Island	0	0	0	0	0	0	0	0	0	0	0	0
Manhattan	1	0	1	0	0	0	0	0	0	0	0	0
Seagate	0	0	0	0	0	0	0	0	0	0	0	0
Gerritsen/ Kiddy	43	30	43	47	7	11	3	2	14	7	0	0

Kingsborough	1	0	1	7	18	26	7	1	8	23	19	0
Midland	1	0	1	0	0	0	0	0	0	0	0	0
South Beach	1	0	1	8	0	8	0	0	0	0	0	0
Wolfe's Pond Park	0	0	0	0	6	2	0	0	0	8	0	0
Totals	**295**	**168**	**265**	**301**	**69**	**70**	**68**	**26**	**88**	**38**	**54**	**50**

This was a limited review or readily available information. Additional research and analysis regarding potential public health affects and and other environmental impacts resulting from the CSOs appears warranted. For example, this investigation did not attempt to identify the correlate Polltuion Advisories and/or Beach Closures with specific design storm events nor were potential health affects or environmental impacts in areas adjoing New York City evalauted. Secondary contact activites such as boating and other designated uses such as fishing or shell bed propagation should also be examined.

5. Anticipated Defenses

A. Administrative Consent Orders Provide a Shield

NYCDEP may attempt to claim that the 2005 Consent Order for Implementation of the Combined Sewer Abatement Program in New York City and the Modified 2007 Consent Order constitute the legal and regulatory framework that governs its activities related to CSO reduction and control activities, the design and implementation of capital improvement projects, and ultimately the creation of the LTCP. NYCDEP may further assert these Consent Orders act as a shield against further enforcement of the requirements under the CWA. Citing Item IX in its SPDES permits as the link between the SPDES permits and the 2005 Consent Order.

NYCDEP may also attempt to claim that the 2005 Consent Order and the 2007 Modified Consent Order provide relief against effluent limit exceedances that are experienced as the result of active construction at a particular WPCP. The Consent Orders may be the basis for an argument by NYCDEP that they are relieved from the requirement to provide 2XDWF treatment capacity during active construction. EPA is assessing the "permit shield" issue and analyzing relevant legal decisions, including a leading case evaluating permits issued under the SPDES program administered by the state of New York. See Atlantic States Legal Foundation, Inc.,v. Eastman Kodak Co., 12 F.3d 353 (2d Cir. 1994).

Disclosure to the permitting authority is an important aspect of any "permit shield" argument. During the December 2008 site visit, NYCDEP representatives stated that they report all instances of non-compliance at each WPCP and that NYSDEC

subsequently determines whether each event constitutes non-compliance. This process is not well defined in the Consent Orders or in the SPDES permits, and the details of this stated arrangement between NYCDEP and NYSDEC are unclear. It should be noted, however, that the Consent Orders *do not* provide regulatory relief or shield NYCDEP from its obligations to properly operate and maintain separate sanitary sewer systems and combined sewer systems or to adhere to the reporting obligations specified in the SPDES permits.

B. NYCDEP's Waterbody/Watershed Plans Will Correct the Problem

NYCDEP may attempt to claim that implementing the Waterbody/Watershed Plans and their underlying Facility Plans will adequately address the CSO problem in New York City. In the event the Waterbody/Watershed Plans do not ensure compliance with applicable water quality standards, NYCDEP will seek revision of waterbody classifications and/or site-specific water quality standards to ensure that the CSO abatement projects, as approved by NYSDEC, result in compliance with applicable water quality standards. It should be noted that NYSDEC will also cite these plans and their execution as an adequate and agreed-upon remedy. The 2005 Consent Order Response to Comments document, which was prepared by NYSDEC, clearly affirms both agencies' perspectives on this issue. An excerpt from the 2005 Consent Order Response to Comments document follows:

> "In summary, the CSO abatement program required under the 2004 ACO commits more funds, achieves greater environmental benefit through improved wet weather capture and system performance, than was required under the 1992 Order. The abatement projects along with the comprehensive monitoring, the

> Waterbody/Watershed Facility Plan reports, the WQS review process and LTCP all fully conform to the CSO Control Policy. The 2004 ACO takes a sound technical step forward in mandating that the most critical CSO abatement projects go forward based upon the best available information, while at the same time preserving future flexibility in conformance with the 1994 EPA CSO Control Policy. The 2004 ACO, in combination with the requirements of the 14 NYCDEP SPDES permits; the consent orders for nitrogen removal and the upgrade of the Newtown Creek WPCP; and NYCDEP's WPCP modernization program result in both a substantial investment and a comprehensive water pollution control program for waters in and around NYC."[41]

This investigation report clearly indicates that the Waterbody/Watershed Plans and any resulting LTCP will not adequately address the CSO problem in New York City, nor do the Waterbody/Watershed Plans fully comply with the intent or requirements of EPA's CSO Control Policy.

C. NYCDEP's Anticipated CSO Expenditures Are Prudent and Reasonable

NYCDEP proposes to spend approximately $3.1 billion (in 2005 dollars) in an attempt to address the longstanding CSO issues in New York City. This expenditure is represented by approximately 30 projects distributed among the 11 Waterbody/ Watershed Plans. Table 28 presents a summary of the costs that were compiled from each of the individual Waterbody/Watershed Plans.

[41] See NYSDEC's 2004 ACO Response to Comments document.

Table 28. Waterbody/Watershed Cost Summary	
Watershed	Cost of Selected Alternative (in millions)
Jamaica	$606.4
Alley	$29.5
Bronx	$14.4
Coney	$177.0
East	$352.0
Flushing	$1,036.6
Gowanus	$257.1
Hutchinson	$18.7
Newtown*	$180.0
Paerdegat	$318.0
Westchester	$67.8
Totals	**$3,057.5**

* Does not include future phases

The Newtown Creek Waterbody/Watershed Plan includes a discussion regarding a potential future phase that could include an additional 40-MG tunnel, Dutch Kills relief sewer, and dredging aeration at an additional cost of $1.2 billion. These activities were to be constructed no sooner than 2030 if adopted in a future phase. This “future phase” scenario was unique to the Newtown Creek Waterbody/Watershed Plan; given the uncertainty regarding its potential inclusion, it has been excluded from the cost estimate.

Sewerage agencies establish sewer use rates and use corresponding revenue as a primary funding mechanism for the operation, maintenance, and capital improvement of their collection systems. Commercial, industrial, and residential sewer users represent the rate-paying customers within the service area. Residential users pay on a per-household basis, and EPA and sewerage agencies have long measured their ability to pay, measured as a proportion of their Median Household Income, in establishing rates. Sewer rates and corresponding revenue must also be sufficient to operate and maintain a collection system

in accordance with CWA regulations and be protective of public health and the environment. Considering these factors, rates representing 2 percent of Median Household Income have been considered both reasonable and effective.

EPA contracted the services of Industrial Economics, Inc. (IEC) to perform a financial capability analysis consistent with EPA's *Combined Sewer Overflows—Guidance for Financial Capability Assessment and Schedule Development*, February 1997, EPA-832-B-97-004. On the basis of the information available, IEC concluded that the City's current residential burden (i.e., assuming $0 LTCP capital costs), measured as Cost per Household, was 1.19 percent of Median Household Income. IEC also concluded that New York City could spend up to approximately $19 billion on future CSO controls without the Cost per Household exceeding 2.0 percent Median Household Income. More modest expenditures of $7.5 billion and $13.5 billion would raise the Cost per Household to 1.5 percent and 1.75 percent Median Household Income. The IEC Financial Capability Assessment report is provided in its entirety as Attachment 6.

6. Potential Relief Sought by the United States

A. Court-Supervised Long-Term Control Plan (LTCP) to Address CSOs

NYCDEP should be required to revisit the underlying purpose and intent of its Waterbody/Watershed Plans and its LTCP planning process to better conform to the intent of EPA's CSO Control Policy. Specifically, the Waterbody/Watershed Plans should be revised to include a more robust analysis of the identified alternatives and to include new alternatives such as increased treatment capabilities at some or all of the WPCPs. The alternatives analysis should better blend the objectives of the CSO Control Policy to both reduce the frequency and volume of CSO events and ensure compliance with water quality standards. The selection of alternatives should consider an accurate estimate of the financial capability of New York City and the technical feasibility of the range of identified alternatives. Last, the process should afford rapid acceleration of a citywide LTCP that contains a defined and enforceable schedule for implementation; the current process is woefully inadequate in this area.

B. Implementation of Capacity Maximization, Operation and Maintenance Program to Address Bypasses

NYCDEP should be required to develop and submit for EPA review and approval a Capacity Maximization, Operation and Maintenance (CMOM) program that is consistent with accepted industry practices to properly manage, operate, and maintain sewer systems; identify and inventory areas in sewer systems with capacity constraints; implement measures to ensure adequate capacity throughout a sewer system; and respond to bypass events. EPA's January 2005 *Guide for Evaluating Capacity, Management,*

Operation and Maintenance (CMOM) Programs at Sanitary Sewer Systems (EPA 305-B-05-002) (EPA' s January CMOM 2005 Guide) must be considered in determining what constitutes "accepted industry practices." Furthermore, the CMOM must adequately ensure that the following needs are met:

1. NYCDEP must maximize both its in-system storage and its ability to convey flow to treatment, by fully characterizing its collection system to identify and remove accumulations of sediment from the combined sewer system.
2. A comprehensive sewer inspection program, which would include an evaluation of 5 to 10 percent of the system annually and would support the development of a system-wide asset management approach to sewer cleaning, sediment accumulation removal, and sewer rehabilitation, is needed. The inspection program must allow NYCDEP to have a complete understanding of the current condition of its entire system.
3. A process to rapidly and effectively address the longstanding issues surrounding a failure to properly operate and maintain tidegates is needed. Specifically, NYCDEP needs to be more aggressive in its gate maintenance efforts, needs to carry out more frequent influent chloride monitoring, and needs to follow up on high chloride numbers in a timely and aggressive manner.
4. NYCDEP's Sentinel Monitoring Program needs to be modified to assess receiving water conditions during both dry and wet weather. Specifically, NYCDEP needs to carry out a more representative mix of monitoring events to provide a more representative picture of water quality in its receiving streams. NYCDEP also needs to more rapidly remove existing and longstanding dry

weather discharges.

5. NYCDEP field crews should be prohibited from using solvent-based and caustic-based cleaners during or immediately before forecasted precipitation events.
6. A process to effectively prioritize the frequency of catch basin inspections and cleaning that correlates with observed field conditions and the sensitivity of receiving waters is needed.

C. Pump Station Backup Power/Emergency Pumping

NYCDEP should be required to carry out a comprehensive pump station condition assessment, and to undertake necessary improvements, upgrades, and complete station rehabilitations on an expedited schedule. The evaluation must include the following:

1. An evaluation of the adequacy of NYCDEP's current pump station backup power and emergency pumping capabilities. For each pump station, NYCDEP must provide EPA detailed information about its backup power and/or emergency pumping capability, lightning strike protection equipment. NYCDEP must also describe in detail its history of power-loss-related and lightning-strike-related overflows and basement backup incidents during the past 5 years. The report must provide a discussion of how NYCDEP intends to reduce the occurrence and severity of bypasses from these facilities and include performance metrics that will be used to demonstrate the effectiveness of the plan and long-term performance goals.
2. An evaluation of and repair of all nonfunctional pump station ventilation systems

as soon as possible.

3. The identification and replacement and/or redesign of the influent bar screens at the Paerdegat Pump Station and other pump stations locations equipped with only manually cleaned bar screens; which have a tendency to blind during significant wet weather events.

D. Improved Wet Weather Operating Plans

NYCDEP should be required to expeditiously maintain and upgrade its WPCPs as necessary to allow compliance with the flow maximization requirements of its SPDES permits. As a component of all future CSO abatement evaluations, NYCDEP should be required to identify and evaluate opportunities to increase flows above 2XDWF. Additional specific activities include:

1. An update to NYCDEP's WPCP-specific wet weather operating plans to ensure sufficient quantifiable operating and performance criteria. Numeric criteria are necessary for consistent plan implementation and for adequate assessment of plan effectiveness.
2. Achieve full implementation of BMP 5, Prohibition of Dry Weather Overflows, by addressing its remaining regulators with small-diameter underflow pipes and/or limited freeboard.
3. A process to identify, repair, replace, or install public notification signs at every CSO as required by its SPDES permit.

E. Bypass and Basement Backup Response Plan

If NYCDEP does not have a Bypass and WIB Emergency Response Plan that results in all bypasses and occurrences of WIB being responded to and halted as rapidly as possible, with mitigation measures being employed to prevent discharge to receiving waters and minimize public health exposures, and with appropriate measures being implemented to prevent recurrence, NYCDEP must develop such a Bypass and Basement Backup Response Plan and submit it to EPA for review and approval. This plan must provide procedures for responding to bypasses and basement backups to minimize the environmental impact and potential human health risk of bypasses and contact with sewage. Specifically, the plan must provide written notice to residents and business owners affected by the occurrence of basement backups. That notice must describe the potential short- and long-term health effects from contacting sewage, including a list of common symptoms resulting from exposure; proper cleanup and disinfection techniques, including use of protective clothing and disposal of contaminated items; and a list of vendors that specialize in disinfection and restoration.

7. Conclusion

A purpose of this report is to provide data and analysis documenting CWA violations by NYCDEP as a basis for a federal enforcement action focused on court ordered injunctive relief and compliance with the CWA and 1994 CSO Control Policy based on a court supervised compliance schedule. These goals are consistent with overall enforcement goals under OECA National Enforcement and Compliance Assurance Priorities for Fiscal Years 2008, 2009, and 2010, along with the related National Program Managers' (NPM) Guidance. The four priority enforcement areas include; Combined Sewer Overflows (CSOs), Concentrated Animal Feeding Operations (CAFOs), Sanitary Sewer Overflows (Bypasses), and Stormwater, as national CWA priority activities. OECA's primary focus for the *FY08-FY10 CSO Performance-based Strategy* is to ensure that communities representing significant population centers are making appropriate progress toward addressing their CSO problems and violations. In addition, CSO communities in non-compliance and causing environmental or human health risks warranting federal attention need to be addressed. Appropriate EPA actions to achieve compliance with the CSO Policy include taking appropriate, enforceable steps to address CSO problems and violations through implementation of enforceable LTCPs. Critical steps to achieving these goals include (1) targeting violators that pose significant risks and conducting effective compliance-monitoring activities and investigations; (2) using the appropriate administrative or judicial enforcement forum to achieve compliance and associated environmental improvements; and (3) effectively providing compliance assistance.

Based on the size and other factors, the New York City combined sewer system is an appropriate target for federal enforcement. EPA has stated that as an interim goal, by the end of FY 2007, 100 percent of major municipal collection systems with an associated total treatment capacity greater than 100 MGD have collection systems of adequate capacity with mechanisms to ensure that additional capacity is provided commensurate with increase in flow or are on an enforceable schedule to achieve the goal. NYCDEP is one of the largest wastewater dischargers in the country, with a daily discharge volume of 1.4 billion gallons and an annual CSO volume of approximately 32 billion gallons. Based on the 2004 Report to Congress, which estimated 850 billion gallons per year of CSO discharges country-wide, NYCDEP itself represents approximately 4 percent of the total CSO discharges in the country.